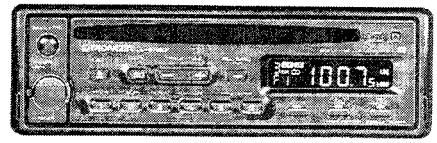
PIONEER
The Art of Entertainment

Service Manual

●DEH-670SDK/GR



ORDER NO.
CRT1511

HIGH-POWER COMPACT DISC PLAYER WITH FM/MW/LW TUNER

DEH-670SDK GR
DEH-670 EW,X1B

COMPACT disc DIGITAL AUDIO

Note:

●See the service manual DEH-M980/UC(CRT1450) for the CD mechanism description and circuit description.

SPECIFICATIONS

General

Power source ..... 14.4 V DC (10.8 — 15.6 V allowable)
Grounding system..... Negative type
Max. current consumption ..... 7 A
Dimensions (chassis) ..... 180 (W) × 50 (H) × 150 (D) mm
(front face) ..... 188 (W) × 58 (H) × 19 (D) mm
Weight..... 1.5 kg

Amplifier

Max. power output ..... 25 W × 2/15 W × 4 (EIAJ)
Continuous power output ..... 11 W × 2
(1% dist. at 1 kHz)
Load impedance ..... 4Ω (4 — 8Ω allowable)
Preout output level/
output impedance (pre out) ..... 500 mV/1 kΩ
Tone controls (bass) ..... ±10 dB (100 Hz)
(treble) ..... ±10 dB (10 kHz)
Loudness contour ..... +10 dB (100 Hz), +6.5 dB (10 kHz)
(volume: –30 dB)

CD player

System ..... Compact disc audio system
Usable discs..... Compact disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics ..... 5 — 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz) (IEC-A network)
Dynamic range..... 90 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.5 — 108 MHz
Usable sensitivity..... 11 dBf (1.0μV/75Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity..... 16 dBf (1.7μV/75Ω, mono)
Signal-to-noise ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 — 15,000 Hz (±3 dB)
Stereo separation..... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range ..... 531 — 1,602 kHz
Usable sensitivity..... 18μV (25 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

LW tuner

Frequency range..... 153 — 281 kHz
Usable sensitivity..... 30μV (30 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

CONTENTS

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FD FEB. 1993 Printed in Japan

SAFETY INFORMATION (EW MODEL)

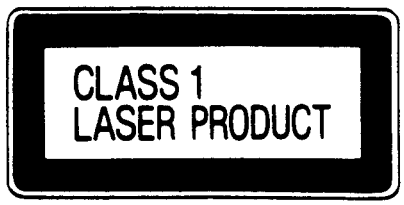
1. Safety Precautions for those who Service this Unit.

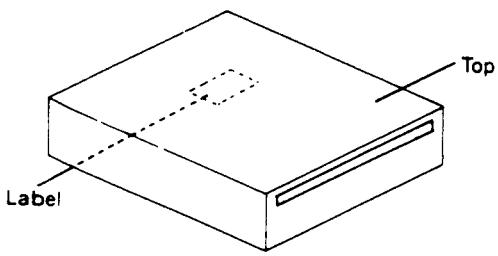
- Follow the adjustment steps (see pages 11 through 27) in the service manual when servicing this unit. When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.

Caution:

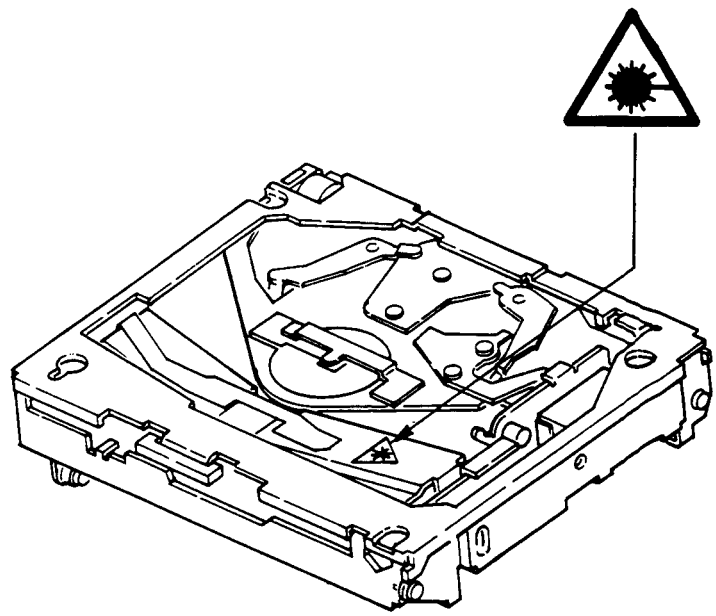
1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the bottom of the player.





3. The tringular label is attached to the mechanism unit arm unit.



4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.

Wavelength = 785 nanometers
Radiant power = 69.7 microwatts
(Through a circular aperture stop having a diameter of 80 millimeters)

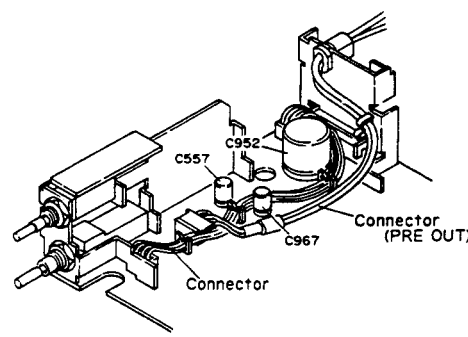
0.55 microwatts
(Through a circular aperture stop having a diameter of 7 millimeters)

ATTENTION

When a repair of this equipment is over, verify the following points:

1. The connector passes under the connector (PRE OUT).
2. The connector passes between C557 and C967.

If the arrangement of connector wire is not made as specified, there are cases where the oscillation is made at the maximum level in bass, treble and volume.



1.OPERATION AND CONNECTION

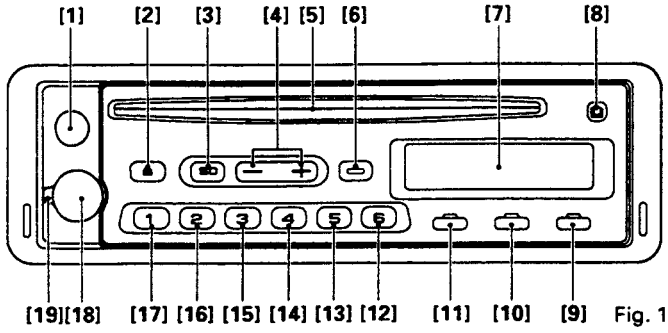


Fig. 1

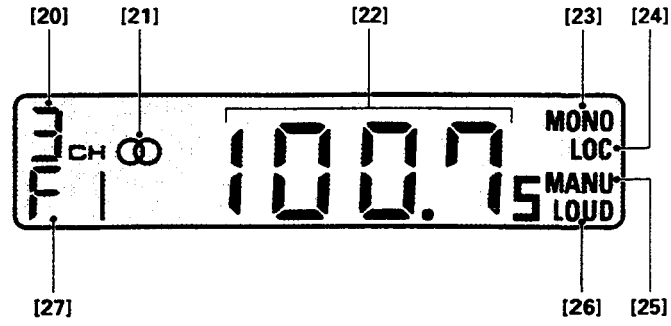


Fig. 2

Using the Removable Front Panel

Detaching the Front Panel

- *The front panel connot be removed during disc loading or ejection.*

1. Press button [8], and the right-hand side of the panel will eject.
2. To remove the front panel, pull its right-hand side toward you. (Fig. 5)

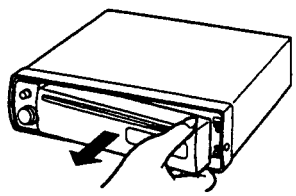


Fig. 5

Take care not to put pressure on the display or drop the front panel.

3. Enclose for safekeeping the front panel that is removed in the supplied protective case. (Fig. 6)

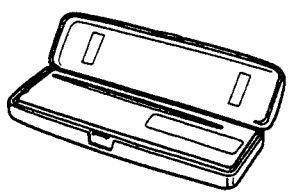


Fig. 6

Replacing the Front Panel

With a hollow in the left-hand end of the front panel aligned to projections on the left-hand front wall of the equipment, press the panel's right-hand side against the equipment to put it into place.(Fig. 7) (Fig. 8)

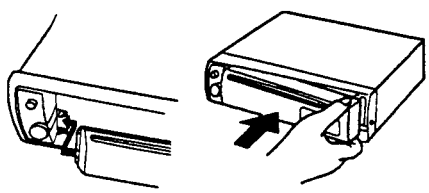


Fig. 7 Fig. 8

- *Do not place the panel from the right side since it will be locked. To unlock, press button [8].*
- *When replacing the front panel, do not put pressure on the display or control buttons.*

Precautions

- *Do not touch the contacts on the front panel or on the unit body, since this may result in poor electrical contact. If dirt or other foreign substances get on the contacts, wipe them with a clean, dry cloth. (Fig. 9) (Fig. 10)*

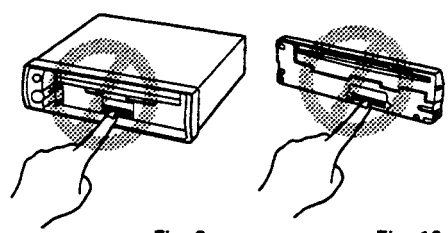


Fig. 9 Fig. 10

Precautions When Handling the Front Panel

- *Do not leave the front panel in any area exposed to high temperatures or direct sunlight.*
- *Do not drop the front panel or otherwise subject it to strong impact.*
- *Do not allow such volatile agents as benzine, thinner, or insecticides to come into contact with the surface of the front panel.*
- *Never try to disassemble the front panel.*

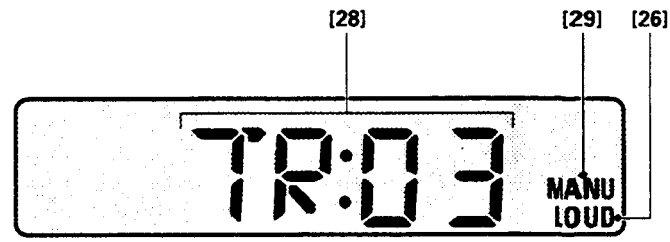


Fig. 3

Adjusting Volume and Tone

Parts Identification (Fig. 1)

[1] Bass / Treble
[2] Eject
[3] Source Selector
[5] Disc Insertion Slot
[6] Loudness
[7] Display
[12], [13] Illumination Switch
[18] Volume / Balance
[19] Fader

Switching Power On

Tuner

Press button [3] to switch the tuner power on. Press button [3] again to switch the power off.

CD Player

When a disc is inserted half-way into the disc insertion slot [5] with its label side upward, the disc is automatically loaded and played. To remove the disc, push button [2].

Changing the source

To change the source, push button [3] with the disc inserted in the slot.
At each press of the button, the source changes as follows: CD player → Tuner → OFF.

Adjusting Audio

Adjusting Volume

Turn the control [18] to the right to raise the volume. Turn the control to the left to lower the volume.

Adjusting the Fader

Turn the control [19] upward to fade sound in the rear speakers. Turn the control downwards to fade sound in the front speakers.

- With a 2 speaker system, set the control in a central position.

Adjusting Bass

Turn the control [1] to the right to increase bass. Turn the control to the left to decrease bass.

Adjusting Treble

Pull the control [1] towards you until it clicks. Turn the control to the right while it is in this position to increase treble. Turn it to the left to decrease treble. After adjusting the control, push it back to its original position.

Adjusting Balance

Pull the control [18] towards you until it clicks. Turn the control to the right while it is in this position to fade sound in the left speaker. Turn it to the left to fade sound in the right speaker. After adjusting the control, push it back to its original position.

Using the Loudness Function

Press button [6] for about 2 seconds and the "LOUD" indication will appear on the display. This loudness function lets you enhance both high and low frequencies to give a more natural sound at low volumes. To cancel this function, press button [6] again for about 2 seconds.

Switching Illumination Colour

Pressing buttons [12] and [13] simultaneously will turn the illumination into green and red.

Using the Radio

Parts Identification

Fig. 1

[3] Source selector
[4] Tuning / Local seek sensitivity / Seek, Manual
[6] Band
[7] Display
[9] FM stereo / Mono
[10] Preset scan / Best stations memory (BSM)
[11] Local station
[12]~[17] Preset

Fig. 2

[20] Preset number
[21] FM stereo
[22] Frequency
[23] FM mono
[24] Local station
[25] Manual
[26] Loudness
[27] Band

Listening to the Radio

1. Turn on the tuner's power by pressing button [3].

Each time the button is pushed the main unit switches between tuner and power off modes.

- This operation will differ if there is a CD inserted in the CD player. Refer to the section on the source switch on page 3 for details.

2. Press Button [6] to select a band.

F I → F II → F III → M/L
(FM1) (FM2) (FM3) (MW/LW)

Use button [4] to switch between MW (531 — 1,602 kHz) and LW (153 — 281 kHz).

3. Use seek tuning to tune in a frequency.

Ensure that "MANU" [25] is not indicated on the display. (If so, turn it off by simultaneously pressing the (+) and the (–) sides of button [4]).

Press either the (+) side or the (–) side of button [4]. When the (+) side is pressed, the tuner will automatically receive high frequencies.

When the (–) side is pressed, it will automatically receive low frequencies.

4. Adjust volume and tone (see page 3).

5. Assign the tuned frequency to one of the Buttons in Bank [12]~[17] (preset memory).

Press and hold down one of the buttons in Bank [12]~[17] for at least 2 seconds. The frequency is assigned to the selected button when the preset number [20] stops flashing on the display. Up to 18 FM stations (6 each for FM1, FM2 and FM3), and six MW/LW stations can be assigned to the preset memory buttons in Bank [12]~[17].

6. Once a frequency is assigned to a Button in Bank [12]~[17], you just need to press that Button to tune it in.

This also causes the number of the button pressed to appear at Position [20] on the display.

Adjusting Seek Sensitivity

The seek tuning function of this tuner lets you select between a local setting for reception of strong stations only, and a DX (distant) setting for reception of weaker stations. The local setting also has 4 seek tuning sensitivity levels for FM and 2 levels for MW/LW to match local conditions.

Changing the Local Seek Sensitivity

1. Use button [6] to select a band.
2. Hold down the button [11] for more than 2 seconds, and the display will show you the current local seek sensitivity (Example: "LOC2") for about 5 seconds.
3. While the local seek sensitivity remains on the display, press the (+) side of button [4] to increase the sensitivity level, and the (–) side to decrease the level as shown below.

FM : LOC1 = LOC2 = LOC3 = LOC4
MW/LW: LOC1 = LOC2

The LOC4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.

- The display of local seek sensitivity returns to the frequency when about 5 seconds have elapsed after the change of sensitivity.

Switching between Local and DX

Press button [11] to switch between Local and DX (distant) seek tuning.

When "LOC" [24] is shown on the display, seek tuning is performed with the local seek sensitivity. Otherwise, seek tuning is performed with the DX seek sensitivity.

Manual Tuning

Use manual tuning when stations are too weak to be picked up by seek tuning.

1. Turn on "MANU" [25] by simultaneously pressing the (+) side and the (–) side of button [4].
2. Each press of the (+) side of button [4] increases the frequency in 50 kHz steps in the FM band, 9 kHz in the MW band and 1 kHz in the LW band. Pressing the (–) side of button [4] decreases the frequency. Holding down either side of button [4] changes the frequency at high speed.

Switching between FM Stereo and Mono

Generally, it is best to allow the ARC (Automatic Reception Control) function to automatically set the optimum listening conditions. ⊙ [21] turns on during stereo broadcast is in reception. When there is a large amount of noise, you can press button [9] for clearer mono reception ("MONO" [23] will appear on the display).

BSM (Best Stations Memory)

This function automatically locates stronger stations and automatically assigns their frequencies to the buttons in Bank [12]~[17], from strongest to weakest. It comes in handy when trying to find local stations while driving.

1. Press button [6] and select a band.
2. Hold down button [10]. After about 2 seconds, BSM search will start. At this time, "----" will flash on the display.
3. The frequency display will return once BSM search is complete, and frequencies are assigned to buttons 1 through 6 in Bank [12]~[17].

- At the end of the BSM search, the displayed frequency is that assigned to button 1 of Bank [12]~[17].
- You can cancel BSM search by pressing button [10] again.
- *If there are fewer than 6 strong stations in the area, some of the buttons in Bank [12]~[17] will not be assigned frequencies, so they will retain any frequencies assigned to them previously.*
- *BSM search may take as long as 30 seconds in areas where there are few strong stations.*

Preset Scan Tuning

This function lets you automatically monitor the stations assigned to the preset buttons.

1. Press the button [10] and the preset number [20] flash.
   Each station assigned to the buttons in Bank [12]~[17] will be automatically tuned in for about 8 seconds.
2. When you hear a station that you like, press button [10] again to cancel preset scan tuning and remain at that station.

Playing Compact Discs

Parts Identification

Fig. 1
[2] Eject
[3] Source selector
[4] Track number search / Fast forward, Reverse
[5] Disc insertion slot
[7] Display
[14] Random play
[15] Music repeat
[16] Highlight scan
[17] Pause

Fig. 3
[26] Loudness
[28] Track number
[29] Manual

Discs

- *Only use compact discs (optical digital audio discs) bearing the mark shown below. (Fig. 11)*

COMPACT disc DIGITAL AUDIO

Fig. 11

- *Do not use record sprays or antistatic agents. Such volatile chemicals as benzine and thinner can also damage the surface of the disc and should not be used.*
- *As with traditional audio records, compact discs are made of plastic. To avoid warping, keep the discs in their cases and do not store them in places exposed to direct sunlight.*

Listening to the Compact Disc

1. On inserting the CD, with the label side up, half way into the CD slot [5], it will automatically be set into position and start to play.

The track number [28] indicator will light.

2. Adjust volume and tone (see page 3).

3. To stop CD playback, press button [3] turning the power off.

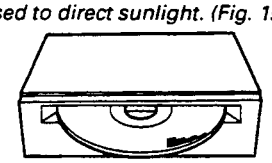
Pressing the button will change the source as follows: CD Player → Tuner → OFF.
Press button [3] again to restart playback. It will play from close to where it was previously stopped.

4. To remove or change discs, press button [2].

When the disc is ejected, pressing it will cause it to be set into position again, and playback to start.

Note:

- *In order to protect the disc, eject it after it has stopped rotating. The timing of ejection may differ according the disc.*
- *If a disc can only be inserted halfway, or if the disc does not play after being loaded, something may be wrong with the disc. Eject the disc by pressing button [2], and check it. If it is all right, insert it again.*
- *Insert the disc with its label (printed) side facing up. If the disc is inserted with the label side facing down, it will not play, and the recorded side may be damaged.*
- *Do not insert 2 discs into the slot at the same time. This may cause a malfunction.*
- *Do not leave an ejected disc in the insertion slot for extended periods since direct sunlight can cause warping. Always return discs to their cases and store in areas not exposed to direct sunlight. (Fig. 15)*



Discs should not be left like this for extended periods. Fig. 15

- *Do not leave an ejected 8-cm CD in the slot while driving. The vibration may make it drop out.*
- *When driving on an uneven road, the player may not reproduce every sound property.*

Condensation

- *During winter the inside of the vehicle may be very cold. If the heater is turned on and the player is used soon after, the disc or optical parts (prism, lens, etc.) may became misted up. If the disc is misted up, wipe it with a soft cloth. If the optical parts are misted up, wait for about an hour for them to worm up. They will return to their normal condition.*
- *Be sure never to touch the signal surface when handling discs. Pick up discs by grasping the outer edges or the edge of the hole and the outer edge. (Fig. 12) (Fig. 13)*

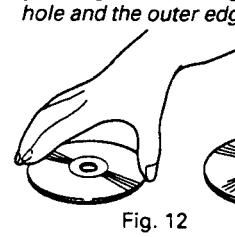


Fig. 12

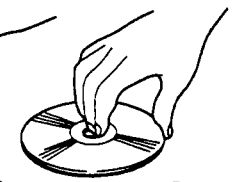


Fig. 13

- *Do not affix paper or tape, and avoid scratching the side of the disc which contains the label (contents of disc).*
- *The disc revolves at high speed within the player unit, so defective (cracked or badly bent) discs should not be used.*
- *Dust and/or finger smudges will have no direct effect on the signal recorded on the disc, but dirt can decrease the amount of light reflected from the recorded surface, thus affecting sound quality. If the disc should become soiled, gently wipe the surface with a soft lint-free cloth, wiping from the center of the disc to the edge. (Fig. 14)*

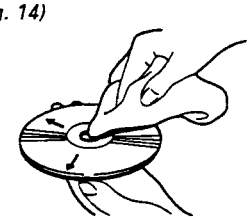


Fig. 14

Track Number Search

The desired track on the disc currently being played can be selected by track (or song) number.

1. Ensure that "MANU" [29] is not indicated on the display. If so, turn it off by simultaneously pressing the (+) side and the (–) side of button [4].
2. Use the button [4] to select a track. Pressing the (+) side increases the track number [28], and pressing the (–) side decreases it. Holding the button down continuously increases or decreases the track number.

Using Fast Forward and Reverse

1. Press simultaneously both (+) and (–) sides of the button [4] "MANU" [29] will appear on the display. At this time the display will show the amount of elapsed disc play time (Example: "01'05"").
2. Press the (+) side of button [4] for fast forward, and the (–) side for reverse.

- Sound is output during fast forward and reverse operations.
- When a disc in which there are several seconds between tracks is used, the amount of elapsed disc-play time is shown, for example, as "–'02"", "–'01"" and "–'00"".

Pausing

1. Press button [17] to pause during disc playback (Track number [28] will change to "----").
2. Press button [17] again to release pause.

- It is possible to select music even during pause by using the track number search ("----" [28] will change to Track number, while the music is being selected). When the selection is completed, the playback will be paused at the beginning of the music.

Using Highlight Scan

Highlight Scan is designed to enable you to conveniently scan all pieces of music contained in the disc by playing 10 seconds each at your designated point of time after the start of the music. The starting time of play is set at one minute in factory. Therefore, the Highlight Scan begins one minute after the start unless you designate it otherwise.

When you do not want to change the factory-set time:

1. Pressing button [16] ("SC" will appear on the display).
2. The contained pieces of music will be played in sequence for 10 seconds each one minute after the beginning.
3. Press button [16] again when your selected piece comes, and it will continue to play. At this point, the Highlight Scan discontinues to operate.

- The previous function automatically resumes when a piece of music with which Highlight Scan began returns.

Changing the Starting Time of Highlight Scan

When you want to set the starting time of the Highlight Scan to 30 seconds:

1. Indicate "MANU" [29] on the display by simultaneously pressing the (+) side and the (–) side of button [4].
2. Keep pressing either (+) or (–) side of button [4] until the numerals reaches 30.
3. Press button [16] for 2 or more seconds ("SC" will appear on the display). Highlight Scan will begin 30 seconds after the start of the next piece of music.

- The starting time of Highlight Scan can be designated at ten or tens of seconds only. A tenth or tenths of seconds can be disregarded.
- If a piece of music ends before your designated point of time at which Highlight Scan starts, the scanning is performed for its beginning 10 seconds.
- If a piece of music lasts less than 10 seconds, so does the Highlight Scan.
- You may wish to change the starting time longer without suspending the function. You may do so, however, only to a relatively long-playing piece of music because, as a matter of course, the time cannot be set so as to come after the end of the music.

Using Music Repeat and Random Play

Music Repeat

1. To repeat the music you are listening to, press button [15] ("RP" will appear on the display).
2. To cancel music repeat, press button [15] to turn off "RP".

- When music repeat is not operational, the whole disc will be played repeatedly.

Random Play

1. To play music randomly, press button [14 ("Rd" will appear on the display). Once the current track has been played, the microprocessor will randomly select the next and subsequent tracks.
2. To cancel random play, press button [14] to turn off "Rd".

- *Since selections are played in random order, the same selection may be played twice in succession.*

Error Mode

Should an abnormality occur — for example, the built-in CD Player cannot be operated, or the music stops during CD playback — the display of this unit will indicate an error mode. (Example: "E-10")

While it the unit is in error mode, a number will be displayed indicating the cause of the error, so please check the items listed below. If you cannot fix the problem after checking the cause of the error, please contact your dealer or your nearest Pioneer service center.

Display	Cause	Treatment
11, 12	Dirt or a scratch on the disc stops the laser beam from being able to focus.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
14	An unrecorded compact disc (CD-R), can be recorded on once is being used.	When you use a CD-R, load one that has been recorded on.
30	Dirt or a scratch on the disc hinders the track number search function.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
10, 12, A0	Electrical or mechanical system fault.	Turn the car ignition switch OFF, then ON again, or change to other sources except CD playback, and then to CD playback again. If the error indication does not disappear, contact your dealer or your nearest Pioneer service station.

HEAT indicator

To prevent deterioration in the semi-conductor laser from overheating, playback of a CD will stop when the temperature surrounding of this unit rise during play. When this occurs, "HHHH" will be indicated on the display. Please wait until the temperature drops.

Using the Clock Display

Parts Identification (Fig. 1)

[3] Clock
[7] Display
[16] Minute Adjustment
[17] Hour Adjustment

Displaying the Time

The clock is displayed when button [3] is pressed (for more than 2 seconds).
Following the same procedure will turn off clock display.

- The clock display can be used only when the main unit is in operation.
- When the clock display is ON, pressing other buttons will release the clock display. The display will be restored approximately 25 seconds after the button operation has been completed.

Adjusting the Time

Adjusting the Hours

Press button [3] till the clock is displayed (for more than 2 seconds). While pressing button [3], press button [17] simultaneously to adjust the hour setting of the clock. Each press of button [17] advances the hour setting by one hour, and holding it down advances the setting at high speed.

Adjusting the Minutes

Press button [3] till the clock is displayed (for more than 2 seconds). While pressing button [3], press button [16] simultaneously to adjust the minute setting of the clock. Each press of button [16] advances the minute setting by one minute, and holding it down advances the setting at high speed.

Connecting the Units

Note:

- *This unit is for vehicles with a 12-volt battery and negative grounding. Before installing it in a recreational vehicle, truck, or bus, check the battery voltage.*
- *To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.*
- *Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.*
- *Secure the wiring with cable clamps or adhesive tape. To protect the wiring, wrap adhesive tape around them where they lie against metal parts.*
- *Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake, and seat rails. Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.*
- *Do not shorten any leads. If you do, the protection circuit may fail to work when it should.*
- *Never feed power to other equipment by cutting the insulation of the power supply lead of the unit and tapping into the lead. The current capacity of the lead will be exceeded, causing over heating.*
- *Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.*
- *Replace fuses only with the types stipulated on the fuse holder.*
- *Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.*
- *Speakers connected to this unit must be high-power types possessing minimum rating of 25 W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.*

(Fig. 15)

1. Antenna jack
2. Black (ground)
   To vehicle (metal) body.
3. Red
   To electric terminal controlled by ignition switch (12 V DC) ON / OFF.
4. Orange
   To terminal always supplied with power regardless of ignition switch position.
5. Fuse resistor
6. Fuse holder
7. Green
8. Gray
9. Green / black
10. Gray / black
11. Green / red
12. Gray / red
13. Front / left speaker
14. Front / right speaker
15. Rear / left speaker
16. Rear / right speaker
17. With a 2 speaker system, connect to the 2 speakers in the front or the rear.
18. Blue
    To system control terminal of the power amp or Auto-antenna relay control terminal (Max. 300 mA 12 V DC).
19. Rear out
20. Red
21. White
22. Connecting cords with RCA pin plugs (sold separately)
23. Blue
24. Power amp (sold separately)
25. Use this for connections when you have the separately available amplifier.

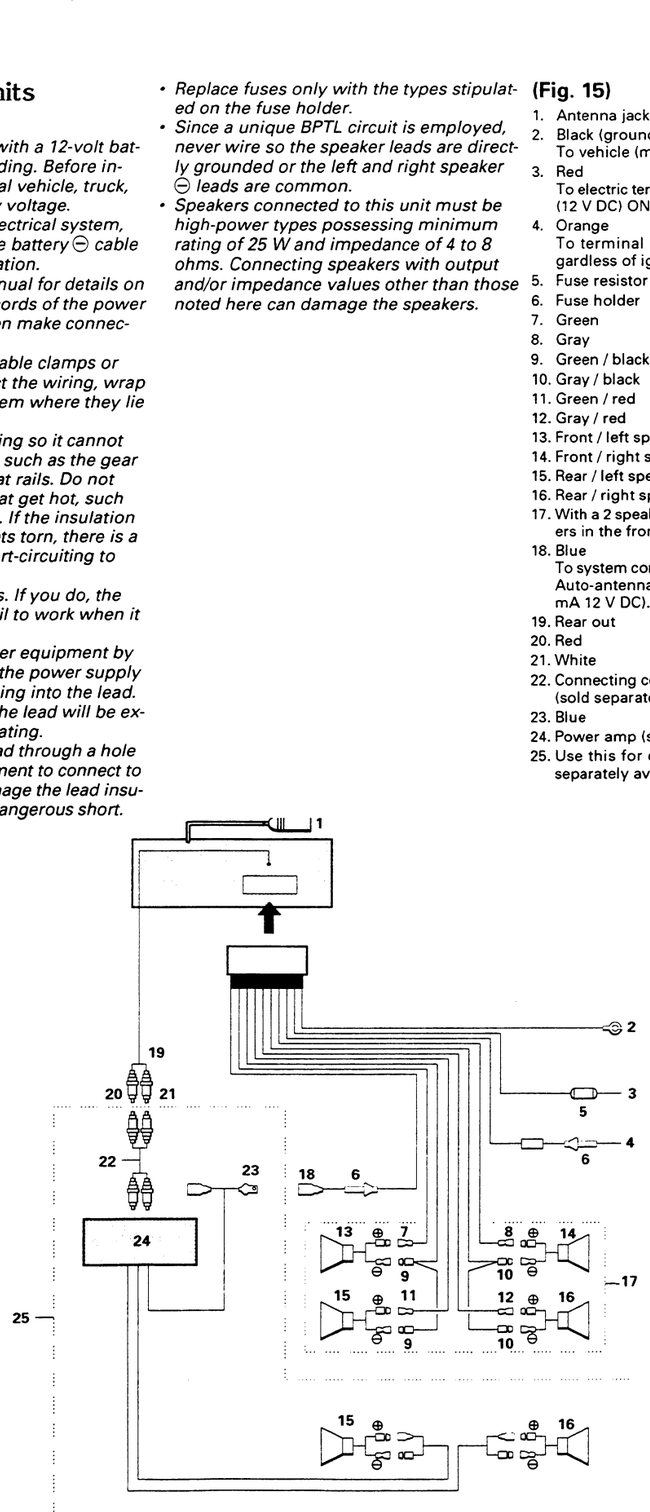


Fig. 15

2. DISASSEMBLY

●Case
1.Remove the two screws.
2.Insert and turn a flat screwdriver at locations indicated by arrows to remove the case.

●Detach Grille Assy
1.Press the detach button,and then pull detach grille assy.

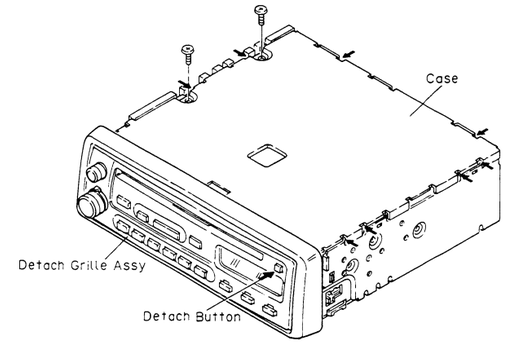


Fig.16

●Panel Assy
1.Remove the three knobs.
2.Remove the screw A.
3.Disconnect the three stoppers indicated by arrow.
4.Disconnect the connector(A).
5.Remove the panel assy.

●CD Mechanism Module
1.Remove the four screws B.
2.Disconnect the connector(B).
3.Remove the CD mechanism module.

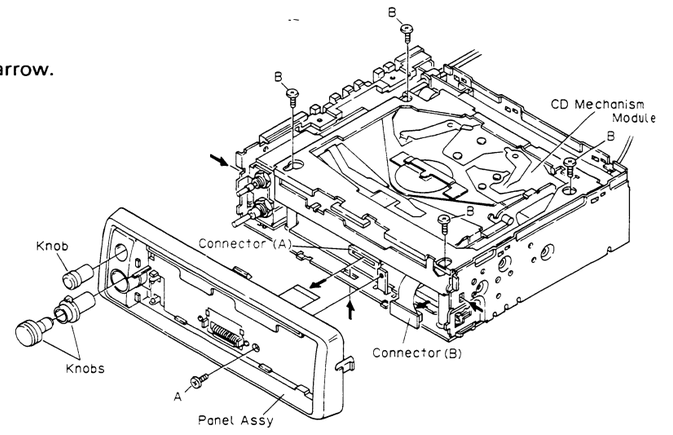


Fig.17

●Chassis Unit
1.Remove the two screws C and the three screws D,and then remove the heat sink.
2.Remove the two screws E,and then remove the holder.
3.Stretch the four claws.
4.Remove the chassis unit.

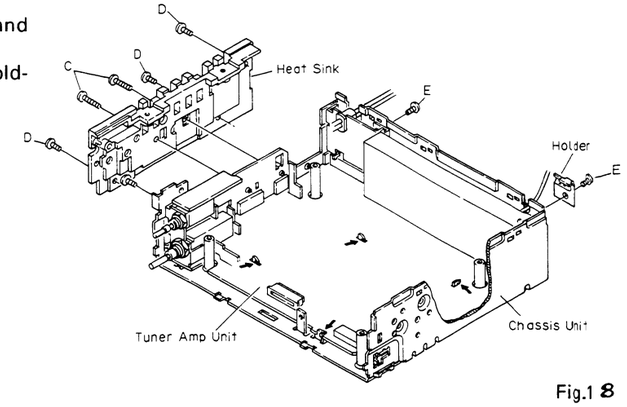


Fig.18

3. BLOCK DIAGRAM

●DEH-670SDK/GR

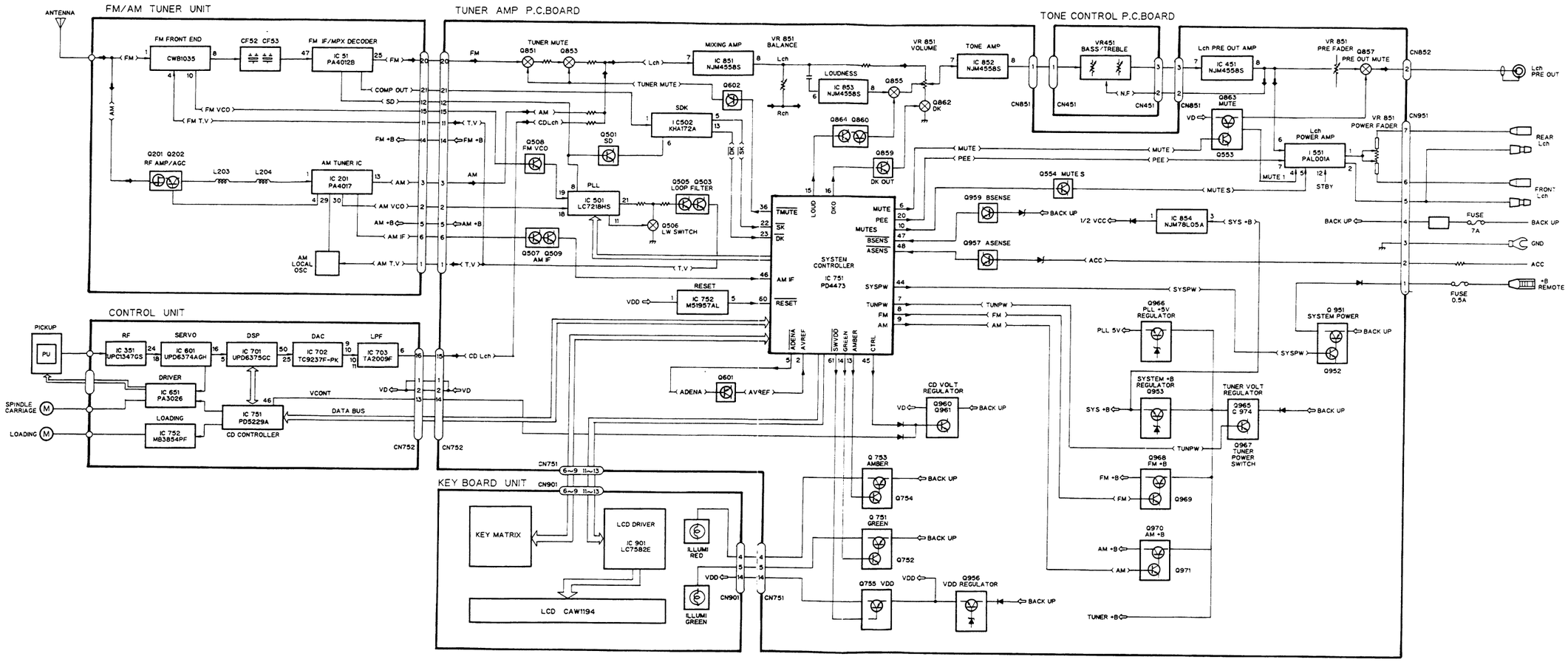


Fig. 19

4. ADJUSTMENT

4.1CD ADJUSTMENT

1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential,therefore,is connected to REFOUT(approx. 2.5V) instead of GND.

If REFOUT and GND are connected to each other by mistake during adjustments,not only will it be impossible to measure the potential correctly,but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this,take special note of the following.

Do not connect the negative probe of the measuring equipment to REFOUT and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFOUT with the channel 2 negative probe connected to GND.

And since the frame of the measuring instrument is usually at the same potential as the negative probe,change the frame of the measuring instrument to floating status.

If by accident REFOUT comes in contact with GND,immediately switch the regulator or power OFF.

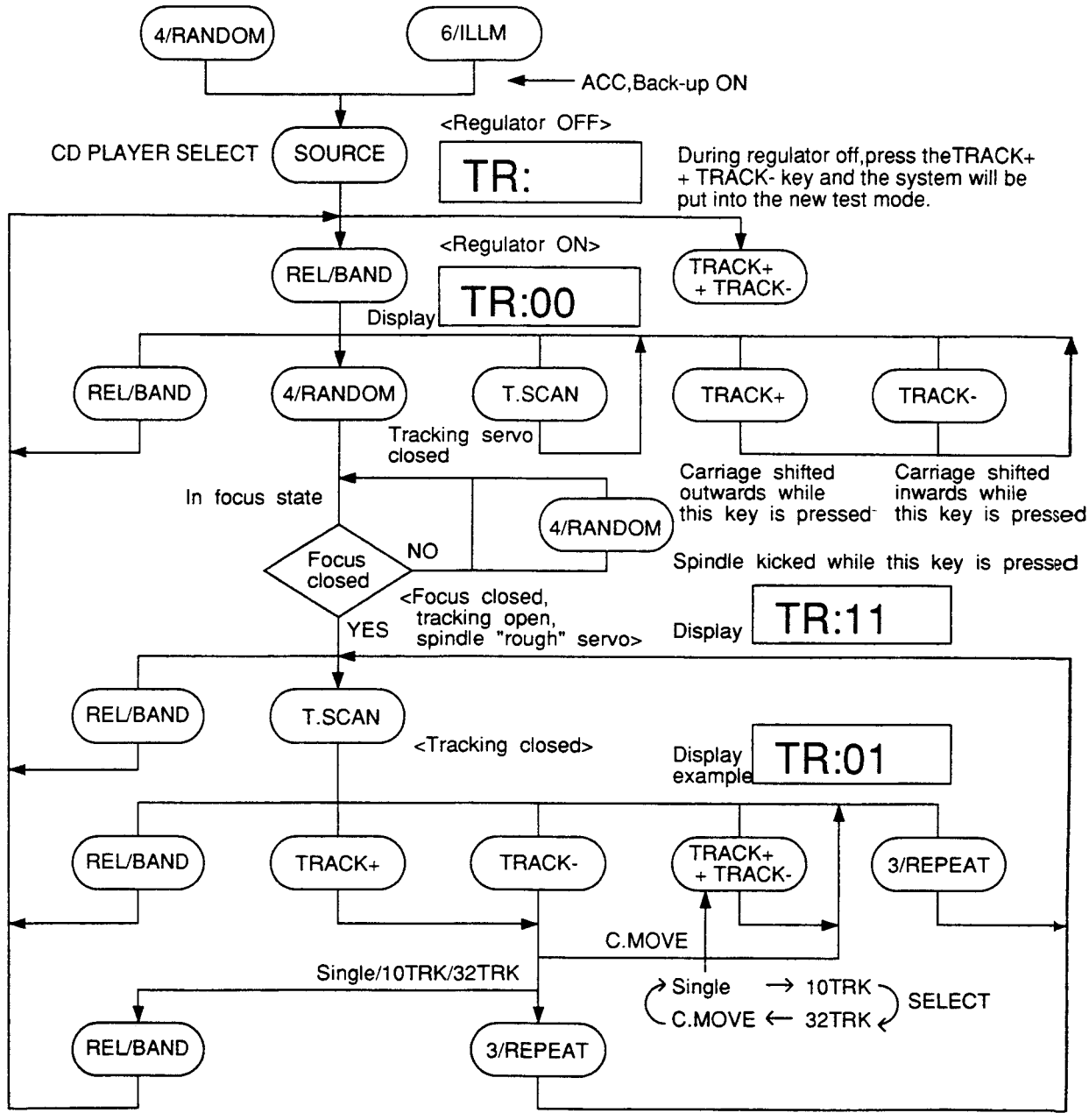
- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.
- Before proceeding to further adjustments and measurements after switching regulator ON,let the player run for about one minute to allow the circuits to stabilize.
- Since the protective systems in the unit's software are rendered inoperative in test mode,be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.
- Test mode starting procedure
  Switch ACC,back-up ON while pressing the 4 and 6 keys together.
- Test mode cancellation
  Switch ACC,back-up OFF.
- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently,if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment,the following malfunctions may occur.
  *During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
  *The unit will not load a disc.
  When the unit malfunctions this way,either reposition the light source,move the unit or cover the photo transistor.
- When loading and unloading discs during adjustment procedures,always wait for the disc to be properly clamped or ejected before pressing the another key. Otherwise, there is risk of the actuator being destroyed.
- Turn power off when pressing the button TRACK+ or the button TRACK- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

Key	Function
REL/BAND	Regulator ON/OFF
TRACK+	FWD Kick
TRACK-	REV Kick
EJECT	EJECT
TRACK+ + TRACK-	Jump mode

Key	Function
T.SCAN	Tracking close
3/REPEAT	Tracking open
4/RANDOM	Focus close
SOURCE	CD ON/OFF

- SINGLE/10TRK/32TRK will continue to operate even after the key is released.Tracking closed the moment C-MOVE is released.
- JUMP MODE resets to SINGLE as soon as power is off.

●Flow Chart


4/RANDOM
6/ILLM
ACC,Back-up ON
<Regulator OFF>
CD PLAYER SELECT
SOURCE
TR:
During regulator off,press theTRACK+ + TRACK- key and the system will be put into the new test mode.
<Regulator ON>
REL/BAND
TRACK+ + TRACK-
Display
TR:00
REL/BAND
4/RANDOM
T.SCAN
TRACK+
TRACK-
Tracking servo closed
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
In focus state
4/RANDOM
Focus closed
NO
Spindle kicked while this key is pressed
<Focus closed, tracking open, spindle "rough" servo>
YES
Display
TR:11
REL/BAND
T.SCAN
<Tracking closed>
Display example
TR:01
REL/BAND
TRACK+
TRACK-
TRACK+ + TRACK-
3/REPEAT
C.MOVE
Single/10TRK/32TRK
Single → 10TRK
C.MOVE ← 32TRK
SELECT
REL/BAND
3/REPEAT

●New Test Mode (aging operation and setup analysis)

The CD ,either single or multiple, plays in the normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number in the multi-mode).
During the setup, the CD software operation status (internal RAM and C-point) is displayed.
The software on the head unit side dose not involve any special problem but runs normally.

(1) How to Put in the NEW TEST Mode
See the test mode flow chart page 12.
(2) Relations of keys between TEST and NEW TEST Modes.

P-BUS Commands	Keys	Test Mode Regulator OFF	Regulator ON	New Test Mode Play in progress	New Test Mode Error / Protection — Talking place
B0	REL/ BAND	Regulator ON	Regulator OFF	REL/BAND	Time of occurrence / Cause of error — Selected
B1	TRACK+	—	FWD-KICK	TRACK+	—
B2	TRACK-	—	REV-KICK	TRACK-	—
B3	T.SCAN	—	TRACKING CLOSE	T.SCAN	—
B4	3/REPEAT	—	TRACKING OPEN	3/REPEAT	—
B5	4/RANDOM	—	FOCUS CLOSE	4/RANDOM	—
B6	—	—	FOCUS OPEN	—	—
B7	—	—	Jump-OFF	—	—
B8	TRACK+ TRACK-	To new Test Mode	Jump-Mode selected	FF REV	Occurrence T.No / Time of occurrence — Selected

Operations, such as EJECT, CD ON/OFF, etc. are to be performed normally

(3)Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause/Detail
40	ELECTRIC	PLAY	FOK=L100ms	Put out of focus
41	ELECTRIC	PLAY	LOCK=L100ms	Spindle unlocked
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Subcode fails to read
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated

Scar, Stain, Vibration, Servo defect, etc....

*The error code is identical with those in the normal mode.

(4)Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving on the internal circumference	10-second time out
03	Carriage moving on the external circumference	10-second time out
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closing	Failure to focus closing
14	Spindle kicked and focus checked	Out of focus
15	Tracking closed and focus checked	Out of focus
17	Carriage closed and focus checked	Out of focus
18	Lock subcode] Waiting	Failure to lock, Subcode failed to read out of focus
19	End	None

(5)Example of 7-segment Display.
(a)SET UP in progress

TRACK MIN SEC
11 11 11 While in the TEST MODE, a status number is indicated in TNO, MIN and SEC.
TRACK
11
MIN SEC
11 11

(b)Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the multi mode.

(c)Protection/Error upon occurrence

ERROR-XX While in the error mode, an error number is displayed in MIN and SEC.

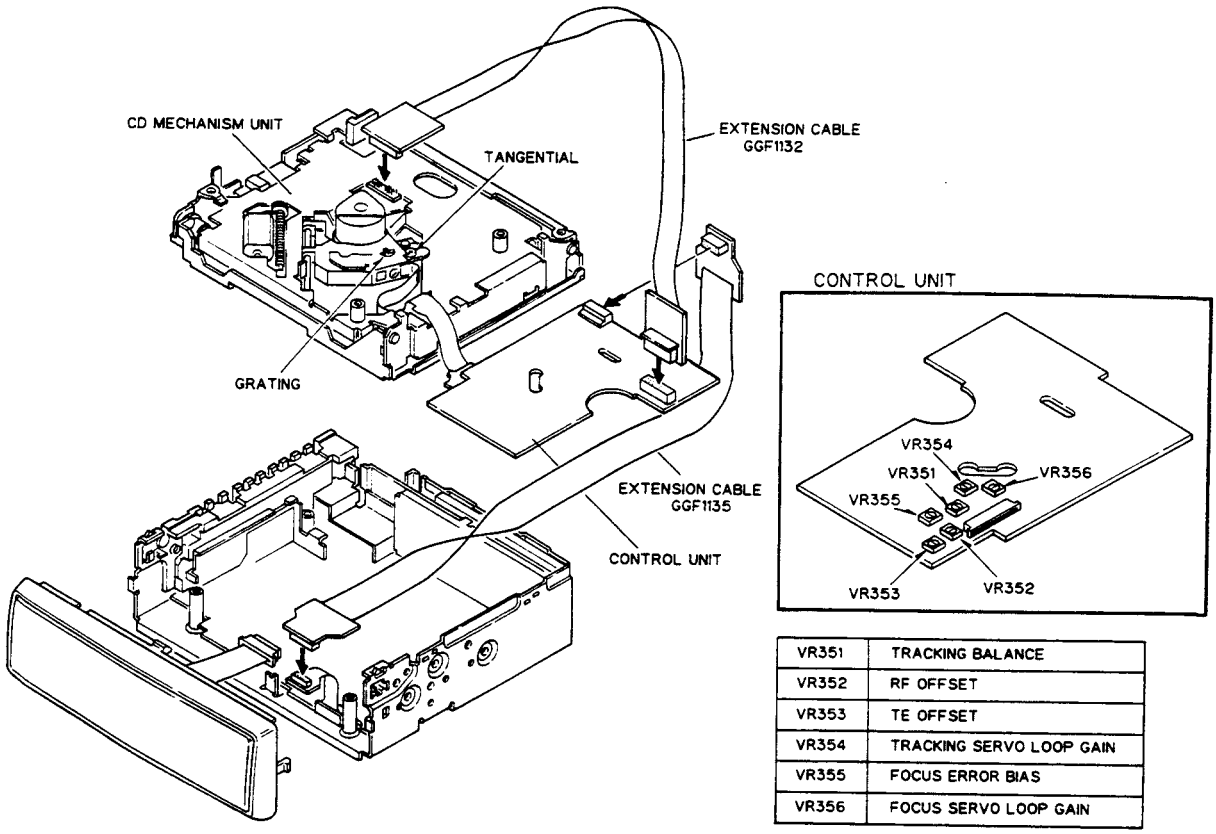
Select the display with the REL/BAND key.

TRACK MIN SEC
10 40 05 While in the PLAY MODE, an absolute time is indicated in TNO, MIN and SEC.
TRACK
10
MIN SEC —Select the display with the TRACK +/- key.
40 05

●**Measuring Equipment and Jigs**

Adjustment	Measuring equipment&jigs
Grating Adjustment	Oscilloscope,clock driver,grating adjustment filter (bandpass filter) (GGF-133),AC millivoltmeter TCD-782 (or SONY TYPE4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tangential Skew Check	Oscilloscope,screwdriver TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Grating Adjustment	Oscilloscope,clock driver,two low-pass filters TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
FE Bias Adjustment	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
RF Offset Adjustment	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
TE Offset Adjustment-1	DC voltmeter Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tracking Balance Adjustment-1	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Focus Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tracking Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
TE Offset Adjustment-2	DC voltmeter Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tracking Balance Adjustment-2	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070

●Adjustment Point



VR351	TRACKING BALANCE
VR352	RF OFFSET
VR353	TE OFFSET
VR354	TRACKING SERVO LOOP GAIN
VR355	FOCUS ERROR BIAS
VR356	FOCUS SERVO LOOP GAIN

Note:

CD mechanism module can be adjusted without removing control unit.

fig. 20

●Test Point

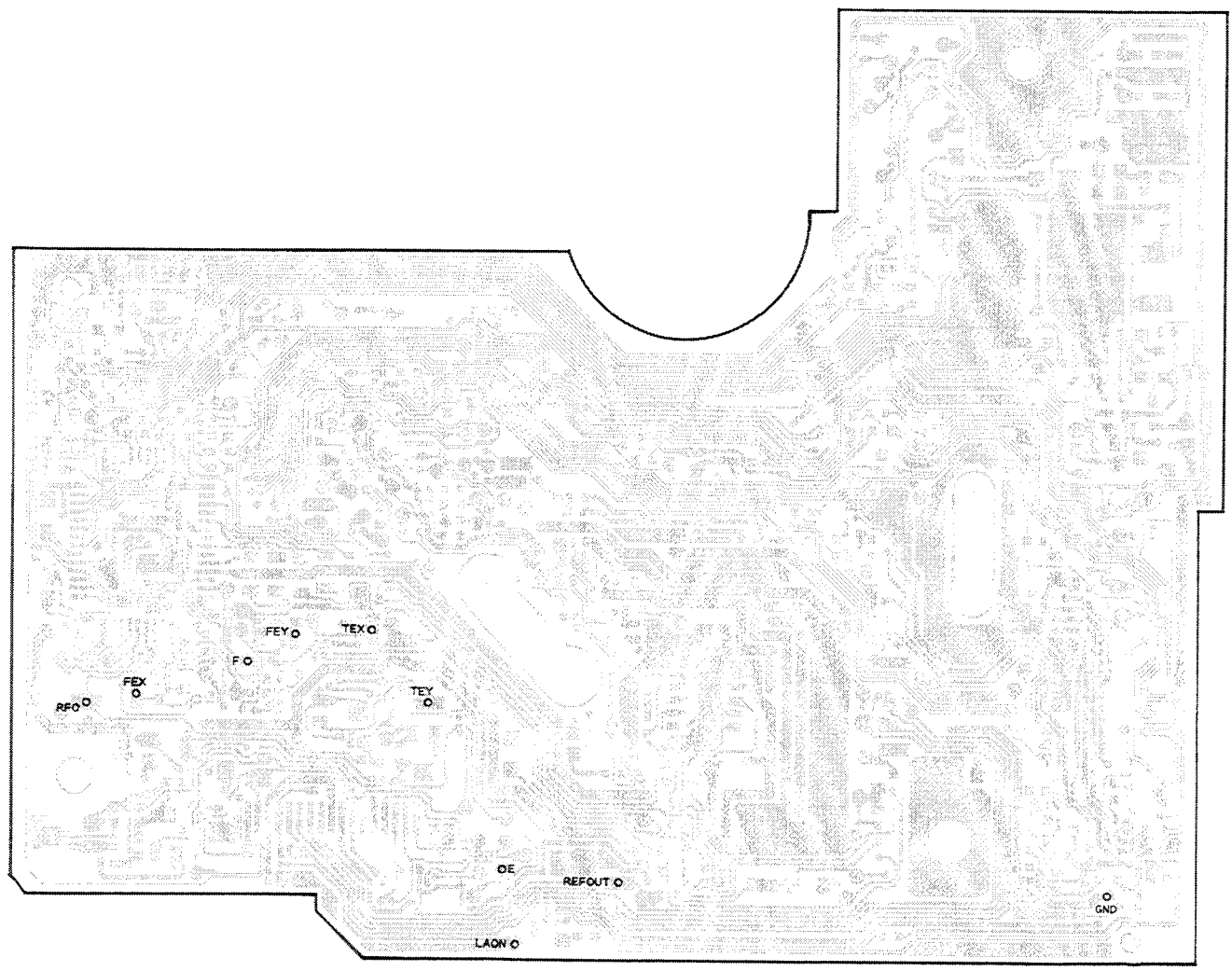


Fig. 21

1 Grating Adjustment (Rough adjustment)

- **Purpose:**
  The grating may need adjustment in a replaced pick-up unit.
- **Maladujstment symptoms:**
  No disc playback;track jumping.

• **Measuring equipment / jigs**	• Oscilloscope,clock driver,grating adjustment filter (bandpass filter)(GGF-133),AC millivoltmeter.
• **Measuring point**	• TEY
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Test mode.
• **Adjustment position**	• Pick-up grating adjustment hole.

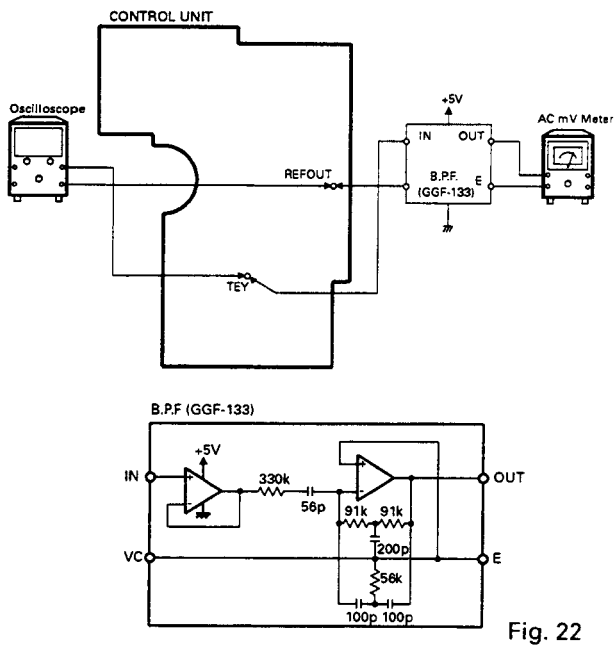


Fig. 22

Adjustment Procedure

1. Switch regulator ON in test mode, and load a disc .
2. Use **TRACK+** or **TRACK-** key as required to bring pick-up at the adjusting hole on control unit (Tune TNO 19). (TYPE 4:TNO 14)
   Mutch with TNO 29 (TYPE 4:TNO 14) when releweing the control unit.
3. Press the **4/RANDOM** key to close focus.
4. While monitoring the TEY filter output by AC millivoltmeter,turn the grating adjustment hole slowly.The AC voltage incresaes and decreases while turning the screw.Search for the minimum voltage level. (This corresponds to the position where the grating is on a track, and is referred to as the null point.)
5. Then while monitoring TEY by oscilloscope,turn the driver slowly clockwise from the null point (as seen from under the pick-up) until the first wave form peak amplitude is reached.

2 Tangential Skew Check

- **Purpose:**
  To check whether tangential skew has been misaligned or not when replacing the pick-up unit.
- **Maladjustment symptoms:**
  No disc playback;track jumping.

• **Measuring equipment / jigs**	• Oscillosope,screwdriver
• **Measuring point**	• RFO
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Normal mode
• **Adjustment position**	• Pick-up tangential adjustment screw

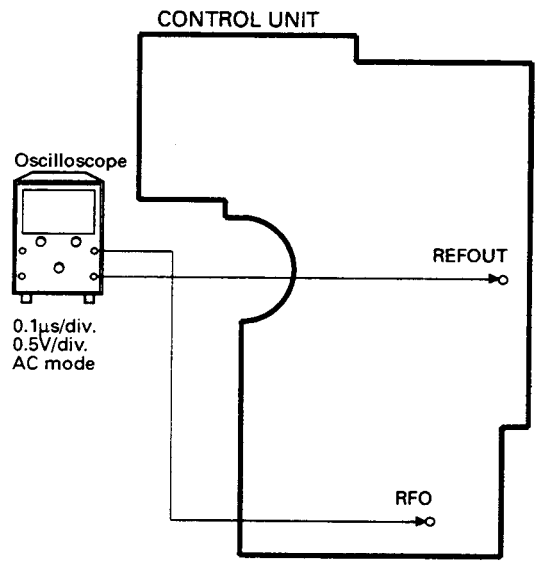
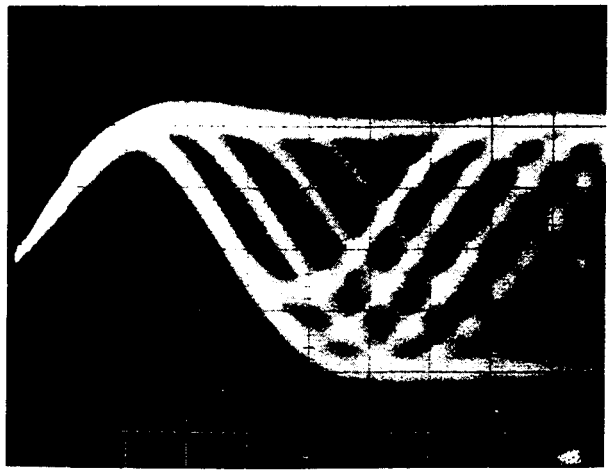


Fig. 23

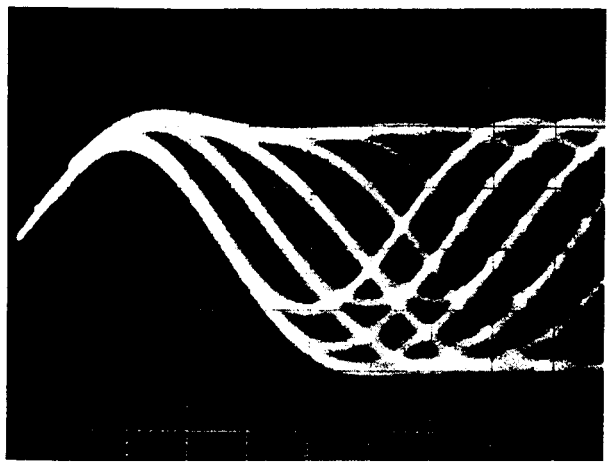
Adjustment Procedure

1. Check that the pick-up position does not differ from that at the same time of grating adjustment. (TCD-782:TNO19, TYPE 4:TNO 14)
2. Turn the tangential adjustment screw to obtain a good RF waveform eye pattern. Turn the adjustment screw both clockwise and counterclockwise to points where the eye pattern deteriorates, and take the midway point as the adjustment point. As a general guide, look for an overall clear waveform, and one of the diamond shapes in the eye pattern. The diamond shapes should appear in fine lines at the point of optimum adjustment. Take care not to knock the pick-up with the screwdriver at this stage. (This kind of accident can result in loss of focus.) (See Fig. 24,25)
3. Apply "screw-lock" to the tangential adjustment screw.
4. After adjusting tangential skew,also adjust the grating.



NG

Fig. 24



OK

AC Mode
0.5V/div.
0.1μs/div.

Fig. 25

3 Grating Adjustment(Fine adjustment)

- **Purpose:**
  The grating may need adjustment in a replaced pick-up unit.
- **Maladjustment symptoms:**
  No disc playback;track jumping.

• **Measuring equipment / jigs**	• Oscilloscope,clock driver,two low-pass filters
• **Measuring point**	• TEY, ELPF output, FLPF output
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Test mode
• **Adjustment position**	• Pick-up grating adjustment hole

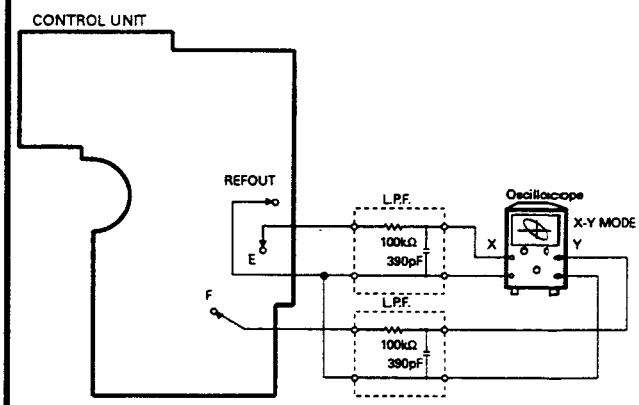


Fig. 26

Adjustment Procedure

1. Switch regulator ON in test mode,and load a disc.
2. Use **TRACK+** or **TRACK-** key as required to bring pick-up at the adjusting hole on control unit (Tune TNO 19). (TYPE 4:TNO 14)

   Mutch with TNO 19 (TYPE 4:TNO 14) when reweing the control unit.
3. Press the **4/RANDOM** key to close focus.
4. With the E low-pass filter output connected to the X axis of the oscilloscope, and the F low-pass filter output connected to the Y axis, apply an input in AC mode and observe the Lissajous figure.(Fig.27-32)
5. Using the driver,adjust the Lissajous figure to a single line (or as close as possible).
6. Switch regulator OFF and remove the filters.

TEY waveform 5ms/div,0.5V/div.

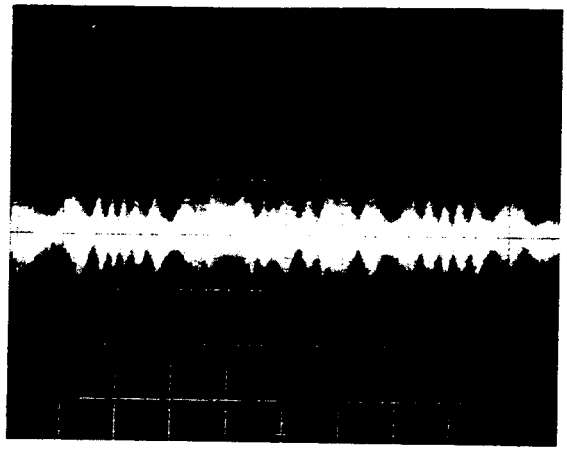


Fig. 27

Null Point

Lissajous figure (AC input)
Horizontal axis E 20mV/div.
Vertical axis F 20mV/div.

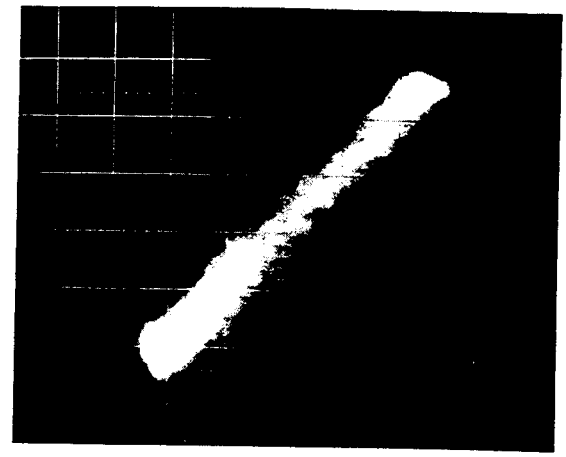


Fig. 28

"Rough" adjustment

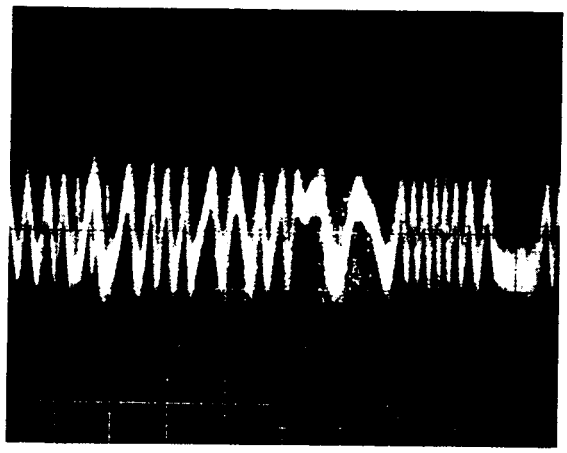


Fig. 29

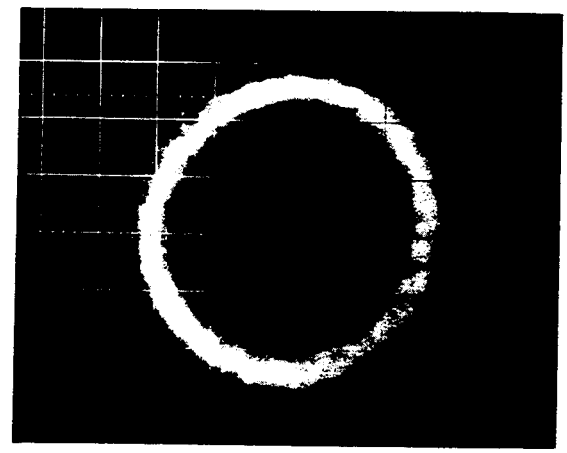


Fig. 30

Final adjustment

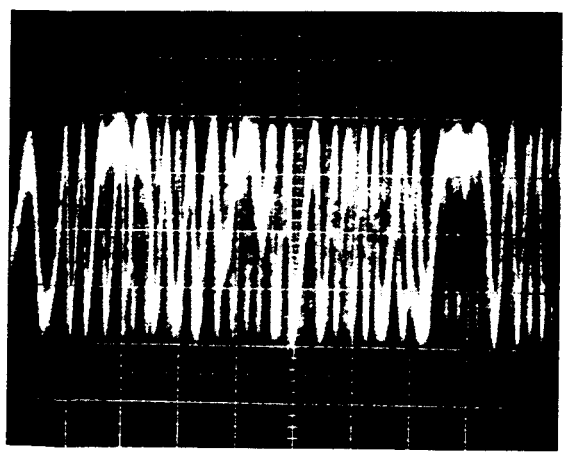


Fig. 31

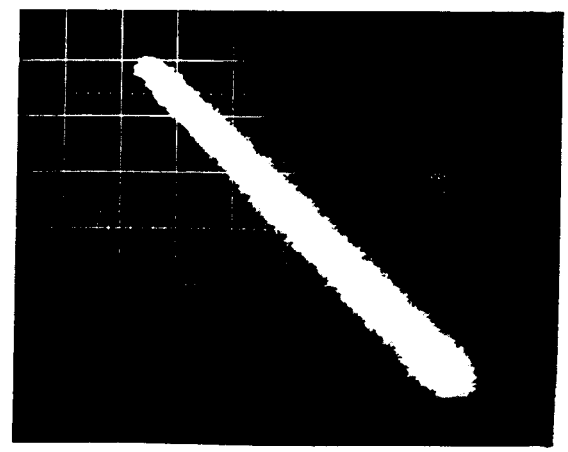


Fig. 32

4 FE Bias Adjustment

- **Purpose:**
  To adjust the focus servo bias to an optimum value.
- **Maladjustment symptoms:**
  Focus closing difficulty,poor playability.

• **Measuring equipment / jigs**	• Oscilloscope
• **Measuring point**	• RFO
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Normal mode
• **Adjustment position**	• VR355(FEB)

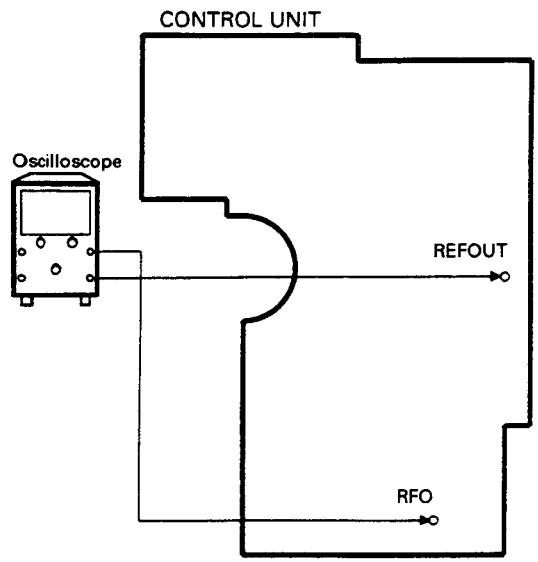
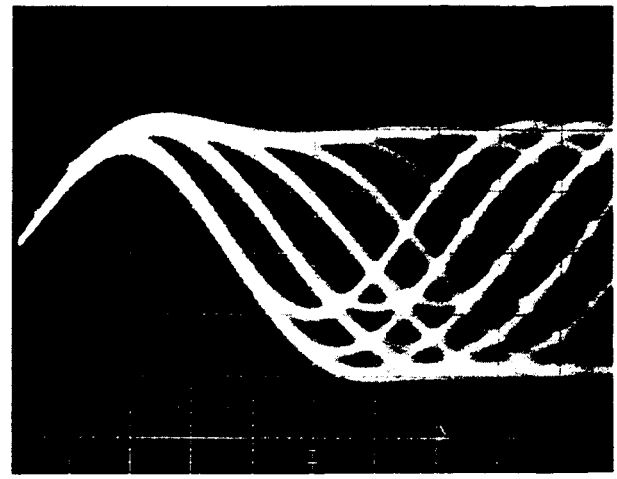


Fig. 33

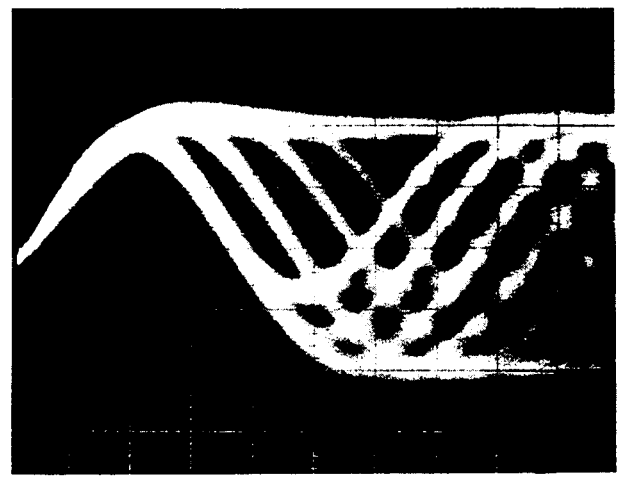
Adjustment Procedure

1. Play in normal mode.
2. Observe RFO in respect to REFOUT in the oscilloscope,and adjust VR355(FEB) to obtain maximum RF and eye pattern.(See Fig. 34,35)



OK

Fig. 34



AC Mode Before adjustment

Fig. 35

5 RF Offset Adjustment

- **Purpose:**
  To adjust the RF amplifier offset to a suitable value.
- **Maladjustment symptoms:**
  Focus closure fails readily.

• **Measuring equipment / jigs**	• Oscilloscope
• **Measuring point**	• RFO
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Normal mode
• **Adjustment position**	• VR352(RFO)

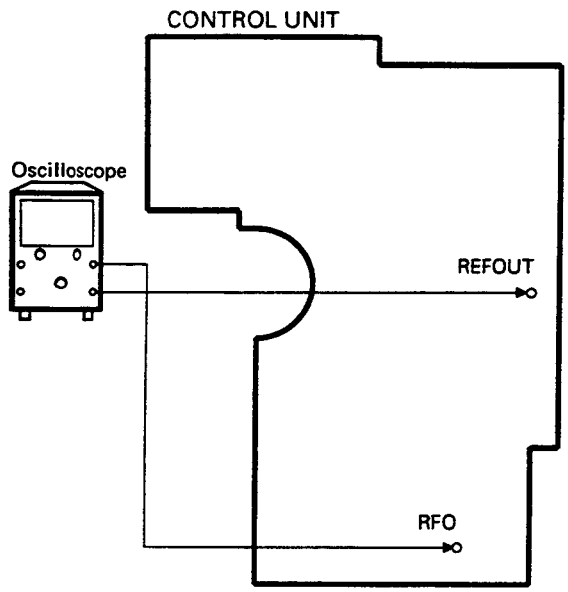
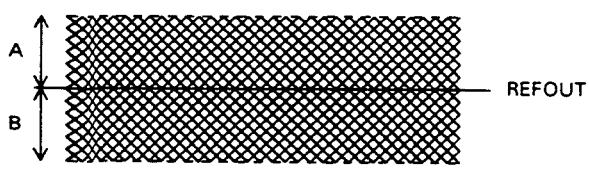


Fig. 36

Adjustment Procedure

1. Play tune TNO 19 in normal mode.(TYPE 4:TNO 14)
2. Use VR352 to adjust the RFO waveform so that REFOUTappears at the center.(A-B must not exceed 100 mV.)



6 TE Offset Adjustment-1

- **Purpose:**
  To adjust the electrical offset of the tracking servo to zero
- **Maladjustment symptoms:**
  Search times too long,carriage run-away.

• **Measuring equipment / jigs**	• DC voltmeter
• **Measuring point**	• TEY
• **Test disc and setting**	• No Disc • Test mode
• **Adjustment position**	• VR353(TEO)

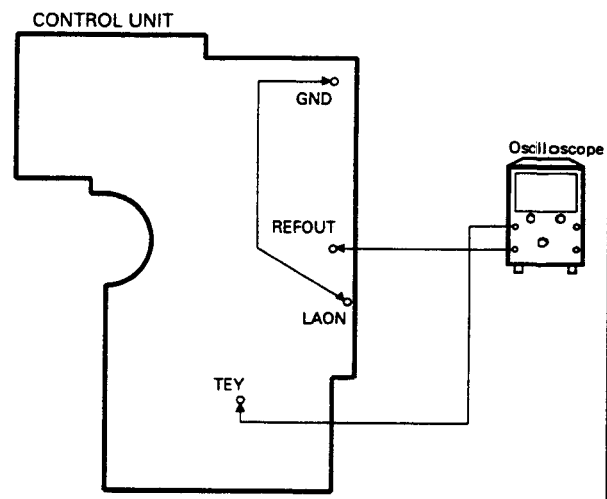


Fig. 37

Adjustment Procedure

1. Connect LAON to GND.
2. Switch regulator ON while in test mode.
3. Using VR353(TEO),adjust the TEY output DC voltage in reference to REFOUT to a value of 0±25mV.
4. Switch regulator OFF.

7 Tracking Balance Adjustment-1

- **Purose:**
  To adjust the tracking servo offset to zero.
- **Maladjustment symptoms:**
  Search times too long,poor playability,carriage run-away.

• **Measuring equipment / jigs**	• Oscilloscope
• **Measuring point**	• TEY(Tracking error signal)
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Test mode
• **Adjustment position**	• VR351(T.BAL)

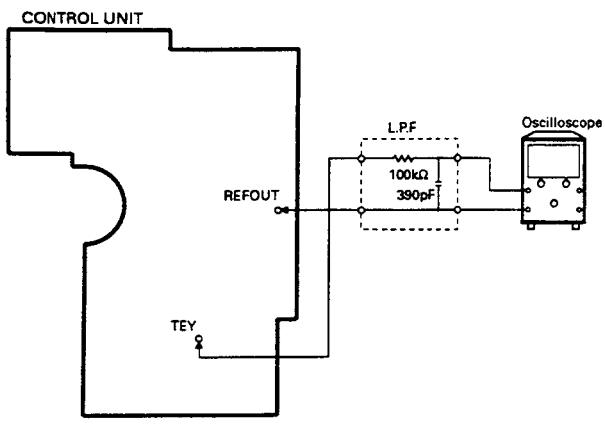
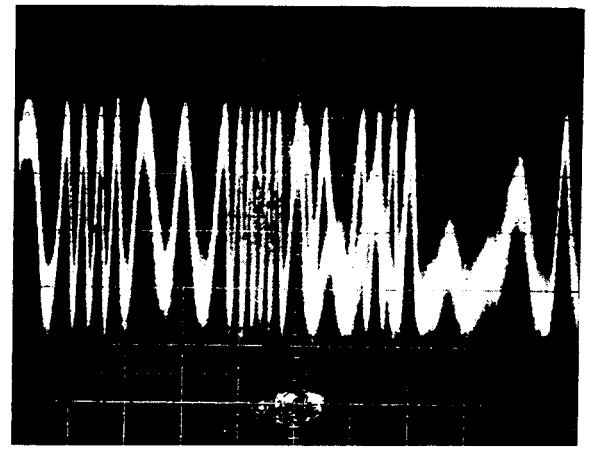


Fig. 38

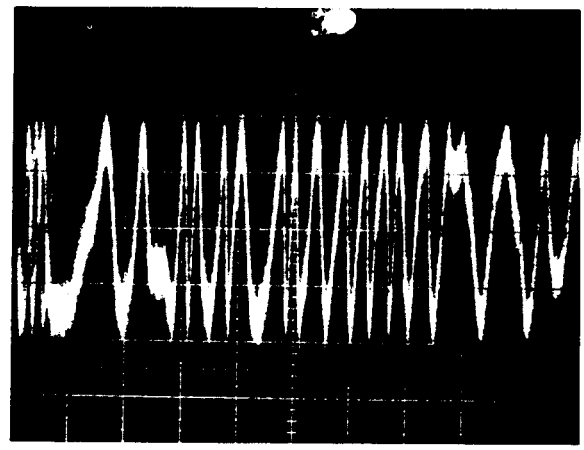
Adjustment Procedure

1. Set the test disc (TCD-782). Switch regulator ON.
2. Using the **TRACK+** or **TRACK-** key,move the pick-up to about the center of the signal surface.
3. Press the **4/RANDOM** key to close focus.
4. Using an oscilloscope,observe the TEY signal in respect to REFOUT.
   Then adjust VR351(T.BAL)to set the positive and negative amplitudes to the same levels.(See Fig. 39-41)
5. Switch the power OFF.



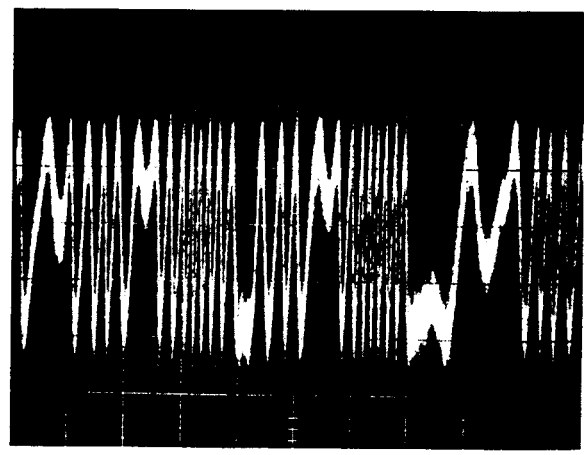
+5% NG

Fig. 39



±0% OK

Fig. 40



−5% NG

10ms/div.
0.5V/div.
DC Mode

Fig. 41

8 Focus Servo Loop Gain Adjustment

- **Purpose:**
  To adjust the focus servo loop gain to an optimum value.
- **Maladjustment symptoms:**
  Poor playability,reduced resistance to vibration,focus closure fails readily.

• **Measuring equipment / jigs**	• Oscillator,gain adjustment filter (GGF-065),dual meter milli-voltmeter
• **Measuring point**	• FEX,FEY
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Normal mode
• **Adjustment position**	• VR356(FG)

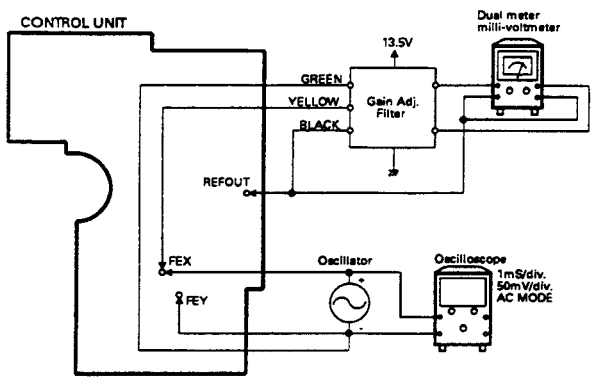


Fig. 42

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 19 in normal mode.(TYPE 4:TNO 14)
3. Set the oscillator to 1kHz,and observe the FEX/FEY output in the oscilloscope.Adjust the oscillator output to obtain a FEX/FEY output of 100mVp-p.
4. Adjust VR356(FG) to obtain a milli-voltmeter difference of 0±0.5dB.

9 Tracking Servo Loop Gain Adjustment

- **Purpose:**
  To adjust the tracking servo loop gain to an optimum value.
- **Maladjustment symptoms:**
  Poor playabillty,reduced resistance to vibration.

• **Measuring equipment / jigs**	• Oscillator,gain adjustment filter (GGF-065),dual meter milli-voltmeter.
• **Measuring point**	• TEX,TEY
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Normal mode
• **Adjustment position**	• VR354(TG)

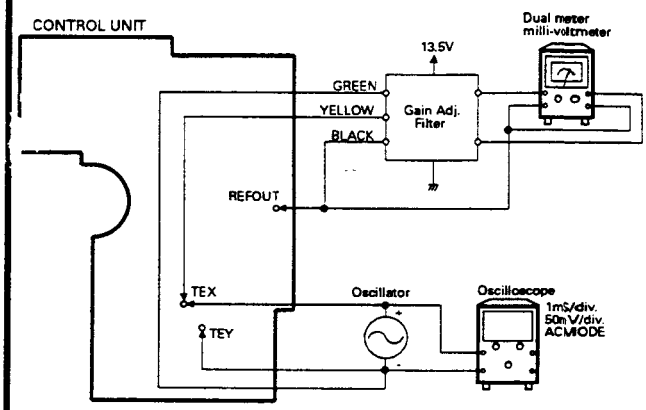


Fig. 43

Adjustment Procedure

1. After checking that the power is OFF,connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 19 in normal mode.(TYPE 4:TNO 14)
3. Set the oscillator to 1.4kHz,and observe the TEX/TEY output in the oscilloscope. Adjust the oscillator output to obtain a TEX/TEY output of 300mVp-p.
4. Adjust VR354(TG) to obtain a milli-voltmeter difference of 0±0.5dB.

10. TE Offset Adjustment-2

- **Purpose:**
  To adjust the electrical offset of the tracking servo to zero.
- **Maladjustment symptoms:**
  Search times too long,carriage run-away.

• **Measuring equipment / jigs**	• DC voltmeter
• **Measuring point**	• TEY
• **Test disc and setting**	• No Disc • Test mode
• **Adjustment position**	• VR353

Adjustment Procedure

Same as for TE offset adjustment-1,but with the DC voltage of the TEY output adjusted to 0±50mV.

The purpose of this additional adjustment is to correct any deviations generated when carrying out the tracing balance and tracking servo loop gain adjustments after completing TE offset adjustment-1.

11. Tracking Balance Adjustment-2

- **Purpose:**
  To adjust the tracking servo offset to zero.
- **Maladjustment symptoms:**
  Search times too long,poor playabiliy,carriage run-away.

• **Measuring equipment / jigs**	• Oscilloscope.
• **Measuring point**	• TEY
• **Test disc and setting**	• TCD-782 (or SONY TYPE 4) • Test mode
• **Adjustment position**	• VR351

Adjustment Procedure

Steps 1 thru 5 same as tracking balance adjustment-1.

6. Check that the level difference between the positive and negative amplitudes of the TEY signal is within 5% (See Fig. 36-38). If grester than 5%,adjust with VR351.
7. If further adjustment was necessary in step 6,repeat TE offset adjusment-2.

4.2 TUNER ADJUSTMENT

●Connection Diagram

NOTICE:
SELECT C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

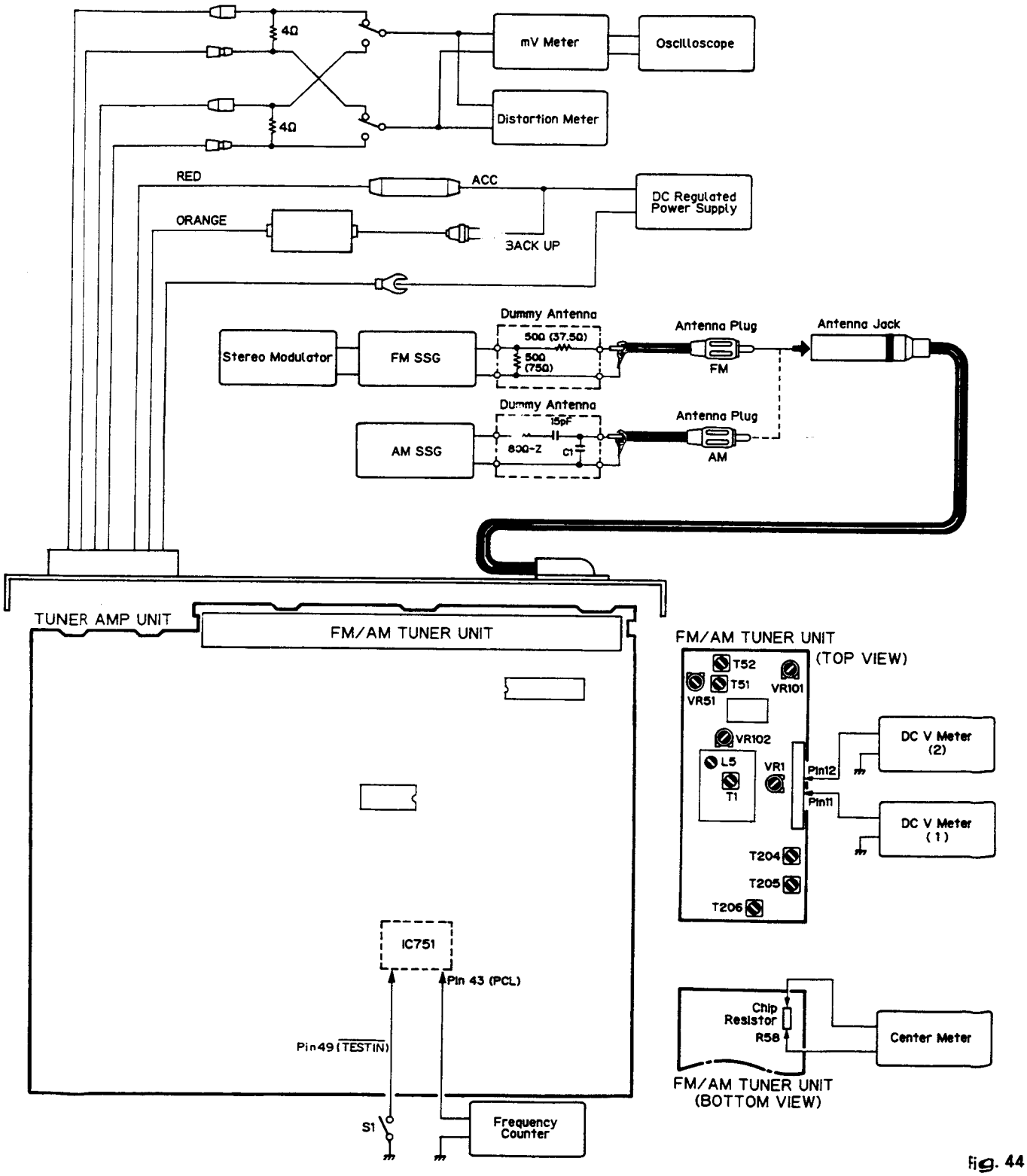


fig. 44

FM Adjustment *Stereo MOD. : 1kHz,L+R=90%,Pilot=10%

	No.	FM SSG(400Hz,100%) Frequency(MHz)	FM SSG(400Hz,100%) Level(dBμV)	Displayed Frequency(MHz)	Adjusting Point	Adjustment Method (Switch Position)
IF	1	98.1025	60	98.1	T51	Center Meter : 0
	2	98.1	60	98.1	T52	Distortion Meter : Minimum
	3	Repeat No.1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates minimum output.				
Front End	1			108.0	L5	DC V Meter(1) : 6.2±0.2V
	2			87.5		Verify that DC V Meter(1) is more than 2.1±0.6V
	3	98.1	8	98.1	T1	Oscilloscope : Optimum Symmetry
	4	98.1*	60	98.1	T1	Distortion Meter : Minimum Rotate T1 less than±90
Soft Mute	1	98.1	60	98.1		mV Meter(1) : AdB
	2	98.1	9	98.1	VR102	mV Meter(1) : A-3dB
ARC	1	98.1*	34	98.1	VR101	mV Meter(1) : Separation 5dB
SD	1	98.1	15	98.1	VR51	DC V Meter(2) : Approx. 5V
	2	98.1	14	98.1		Verify that DC V Meter(2) is approx. 0V.
	3	98.1	55	98.1	VR1	DC V Meter(2) : Approx. 5V
		Connect collector of Q2 to GND. Connect DC regulated power supply to pin 3 of FM front end through resistor(330Ω). Add 4.3V from DC regulated power supply.				
	4	98.1	54	98.1		Verify that DC V Meter (2) is approx. 0V.

MW,LW Adjustment

	No.	AM SSG(400Hz,30%) Frequency(kHz)	AM SSG(400Hz,30%) Level(dBμV)	Displayed Frequency(KHz)	Adjusting Point	Adjustment Method (Switch Position)
Tuning Volt	1	(MW MODE)		1,602	-	Verify that DC V Meter(1) is less than 6.5V.
	2	(LW MODE)		153	-	Verify that DC V Meter(1) is more than 2.0V.
IF	1	999	20-25	999	T204,205,206	mV Meter(1) : Maximum

Clock Verification

No.	Verification Method
1	BACK-UP→ON,ACC→ON
2	S1 : ON
3	Frequency Counter : 1,048,576Hz±24Hz

●ICs

●Pin Functions (PD4473A, PD4425A)

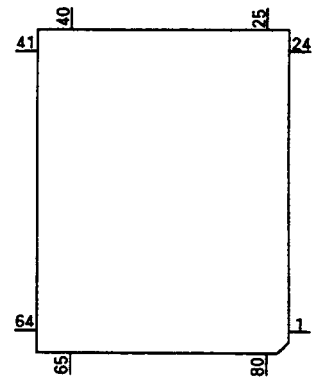
Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC			Not used
2	AVREF	I		A/D converter reference voltage
3	VDD			Power supply
4	VPP			PROM write power supply
5	$\overline{\text{ADENA}}$	O	C	AVREF enable output
6	MUTE	O	C	Mute output
7	TUNPW	O	C	Tuner power control output
8	FM	O	C	FM power control output
9	AM	O	C	AM power control output
10	MUTES	O	C	Mute control output for SK alarm
11,12	NC			Not used
13	AMBER	O	C	Amber (Red) illumination light output
14	GREEN	O	C	Green illumination light output
15	LOUD	O	C	Loudness ON/OFF output
16	DKO	O	C	DK interruption output
17–19	NC			Not used
20	PEE	O	C	Beep tone output
21	NC			Not used
22	$\overline{\text{SK}}$	I		SK signal input
23	$\overline{\text{DK}}$	I		DK signal input
24	PDI	I		Data input for PLL IC
25	PCE	O	C	Chip enable output for PLL IC
26	PDT	O	C	Data output for PLL IC
27	PCK	O	C	Serial clock output for PLL IC
28,29	NC			Not used
30	VDIN	I		VD sense input
31,32	NC			Not used
33	GND			GND
34,35	NC			Not used
36	$\overline{\text{TMUTE}}$	O	NM	Tuner mute output
37–39	NC			Not used
40	$\overline{\text{BRST}}$	O	C	P-BUS reset output
41	BRXEN	I/O	C	P-BUS reception enable input
42	NC			Not used
43	PCL	O	C	Clock adjustment output
44	SYSPW	O	C	System power supply control output
45	CTRL	O	C	Main power supply control output
46	AMIF	I		AM IF signal input
47	$\overline{\text{BSENS}}$	I		Back up power sense input
48	$\overline{\text{ASENS}}$	I		ACC power sense input
49	$\overline{\text{TESTIN}}$	I		Test program mode input
50	$\overline{\text{BSRQ}}$	I		P-BUS serial pole request input
51	BDATA	I/O	C	P-BUS serial data input/output
52	$\overline{\text{BSCK}}$	I/O	C	P-BUS serial clock input/output
53	$\overline{\text{TENBL}}$	I		Test enable input
54	GND			GND
55	XT1			Not used
57	IC			GND
58	XT2			Not used
58	X1			Crystal oscillator connection pin
59	X2			Crystal oscillator connection pin
60	$\overline{\text{RESET}}$	I		Reset input
61	$\overline{\text{SWVDD}}$	O	C	Key board unit power supply control output
62	$\overline{\text{LCK}}$	O	C	Clock output for LCD driver
63	LDT	O	C	Data output for LCD driver
64	LCE	O	C	Chip enable output pin for LCD driver
65–67	NC			Not used
68	SIMK4	I		Model select input 4
69	SIMK3	I		Model select input 3
70	SIMK2	I		Model select input 2
71	SIMK1	I		Model select input 1

Pin No.	Pin Name	I/O	Output Format	Function and Operation
72	SIMK0	I		Model select input 0
73	AGND			Analog circuit GND
74	DSENS	I		Grille detach sense
75	NC			Not used
76	SL	I		Signal level for tuner
77–80	KD4–KD1	I		Key sense input

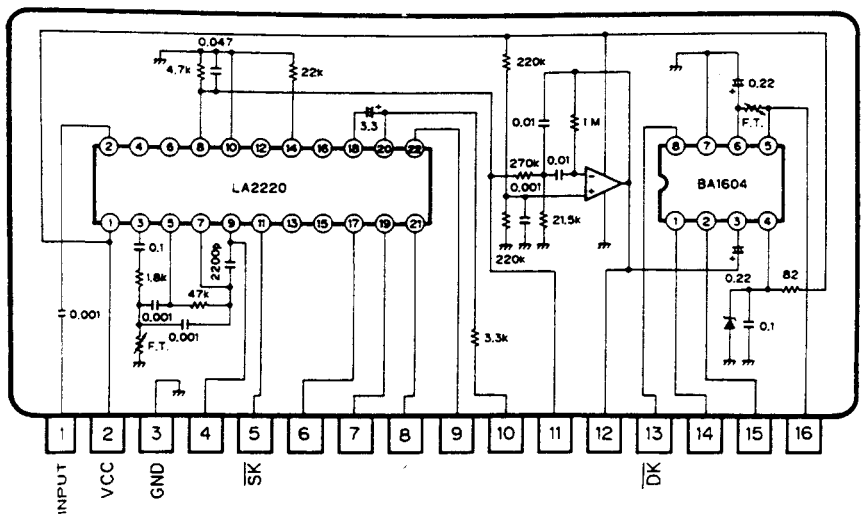
Output Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

IC's marked by * are MOS type.
Be careful in handing them because they are very liable to be damaged by electrostatic induction.

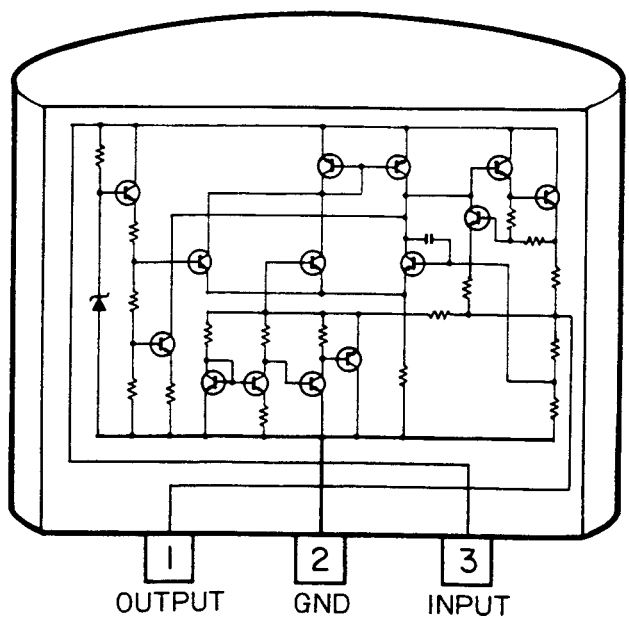
*PD4473A
*PD4425A



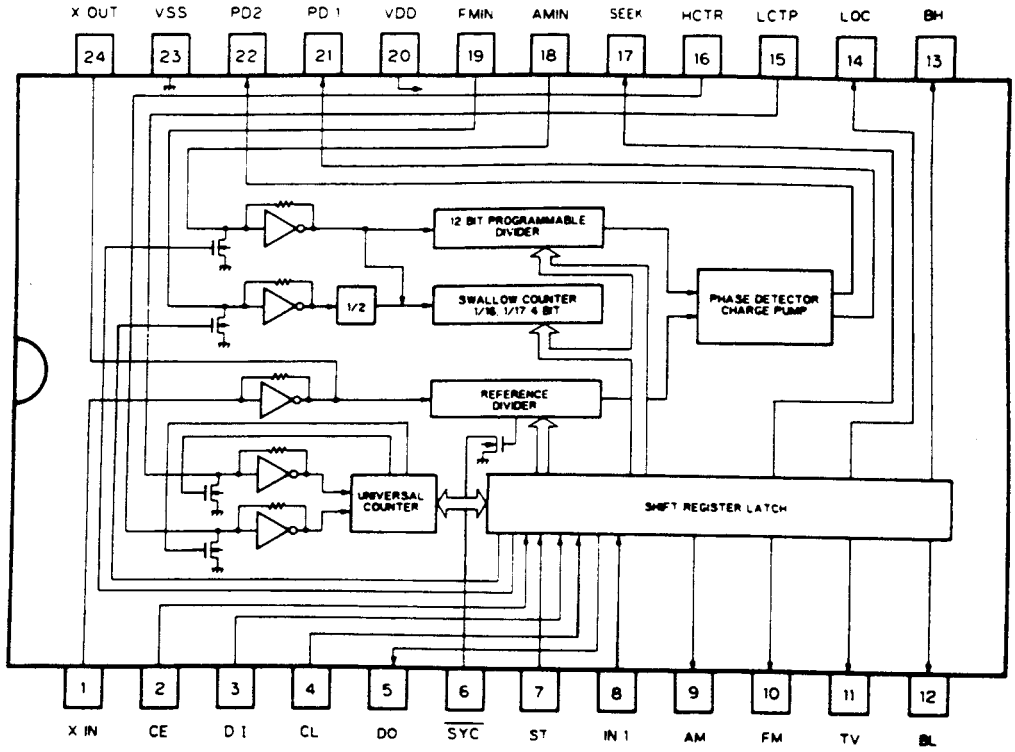
KHA172A



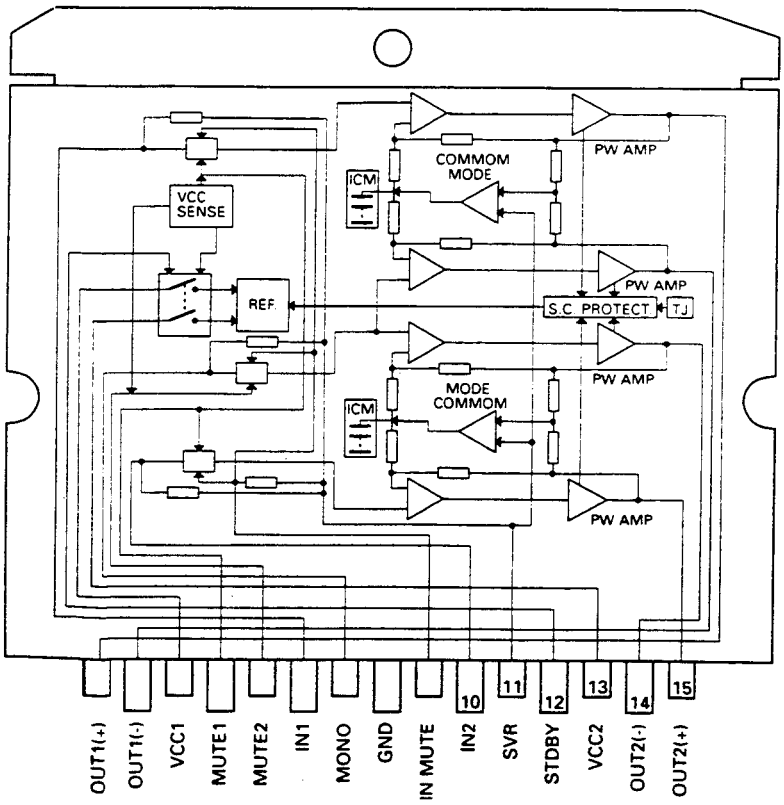
NJM78L05A



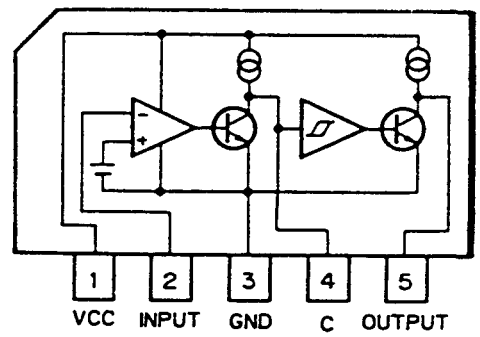
LC7218HS



PAL001A



M51957AL



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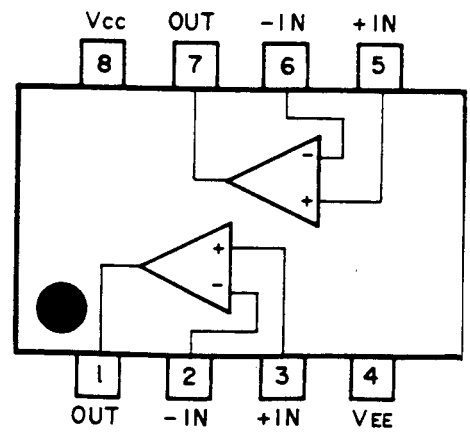


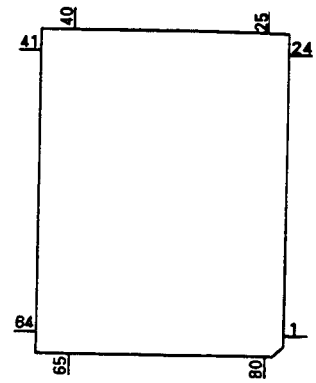
●**Pin Functions (PD5229A)**

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC			Not used
2	TEMP	I		Temperature detector
3	$\overline{\text{VDSENSE2}}$	I		Short sense input
4	DCD	O	NM	Command/data appointment output
5	$\overline{\text{DCS}}$	O	NM	Chip select output
6	DRDY	I		Ready input
7	$\overline{\text{DRST}}$	O	NM	Reset output
8	A0	O	NM	Control signal distinguishing data from microcomputer
9	XSCK	O	NM	LSI clock output
10	XSO	O	NM	LSI data output
11	XSI	I		LSI data input
12	$\overline{\text{STB}}$	O	C	LSI Strobe output
13	$\overline{\text{RST}}$	O	C	Reset output pin
14	$\overline{\text{ENDOUT}}$	O	C	Digital output enable signal
15	PEE	O	C	Beep tone output
16,17	NC			Not used
18	$\overline{\text{BRST}}$	I		Bus communication reset input pin
19	$\overline{\text{BSRQ}}$	O	C	Bus communications service request output pin
20	$\overline{\text{BRXEN}}$	I/O	C	Bus communication reception enable input pin
21	$\overline{\text{BSCK}}$	I/O	C	Bus serial clock input/output
22	BSO	O	C	Serial data output pin
23	BSI	I		Bus serial data input
24	$\overline{\text{EJSW}}$	I		Eject signal input
25	REMIN	I		Remote control pulse input
26	CNVSS			GND
27	$\overline{\text{RESET}}$	I		Reset input
28	FECNT	O	C	FE output control pin
29	NC			Not used
30	XIN	I		Crystal oscillating element connection pin
31	XOUT	O	C	Crystal oscillating element connection pin
32	VSS			Gnd
33–40	NC			Not used
41	POWER	O	C	CD +5V control
42	CONT	O	C	Servo driver power supply control
43,44	NC			Not used
45	$\overline{\text{VDSENS}}$	I		VD over voltage sense input
46	VDCONT	O	C	VD control input
47	DSET	O	C	Disc set indicator control output
48	BLGT	O	C	LCD back light control output
49	VMC	O	C	Loading motor driver power supply
50	EJ	O	C	Loading motor EJECT control
51	LOAD	O	C	Loading motor LOAD control
52	NC			Not used
53	DINC	I		Disc insert sense input
54	EJTD	I		Disc eject position sense input
55	CLAMP	I		Disc clamp sense input
56	NC			Not used
57	HOLD	O		Hold control output
58	TBC	O	C	Tracking bank switching output
59	NC			Not used
60	MIRR	I		Mirror detector input
61	LOCK	I		Spindle lock detector input
62	FOK	I		FOK signal input
63	$\overline{\text{HOME}}$	I		Home position detector input
64–68	NC			Not used
69	OPTSW	I		Digital output ON/OFF input
70	CDMUTE	O	C	CD mute output
71	ADENA	O	C	A/D reference voltage output
72	TESTIN	I		Test program mode input

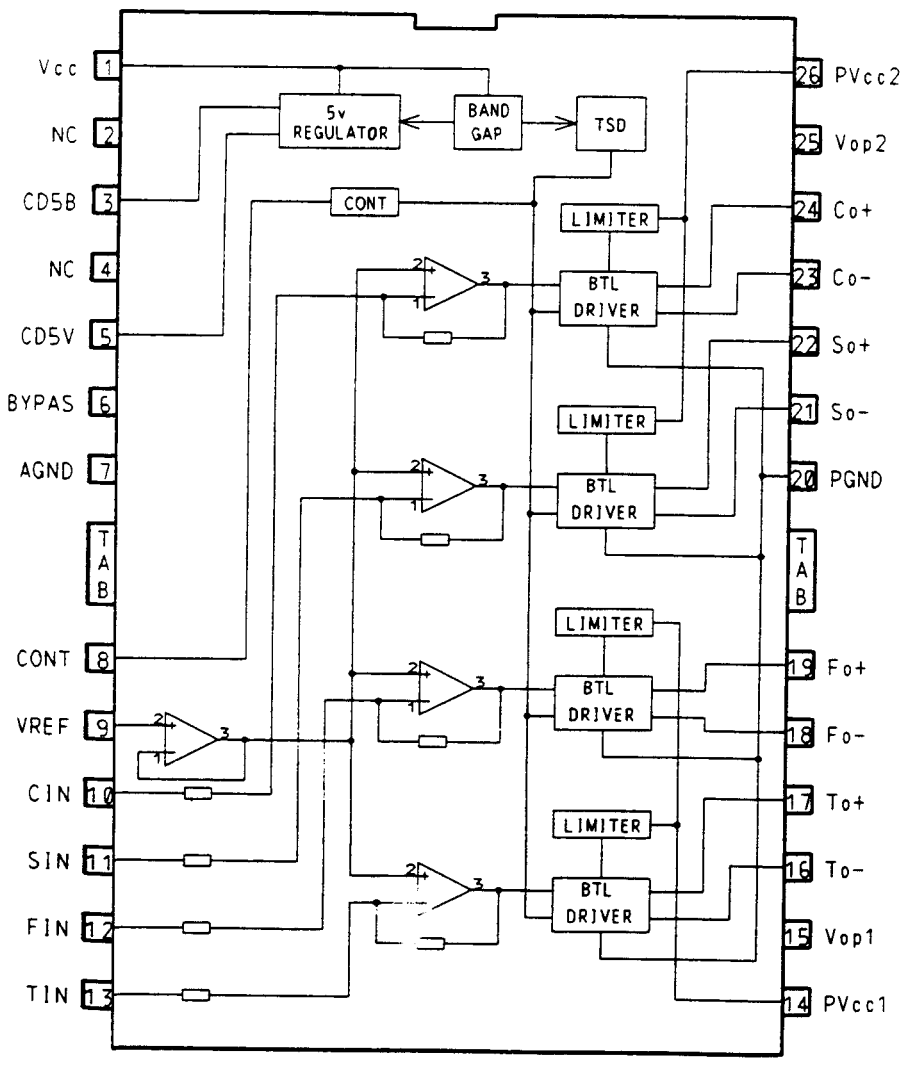
Pin No.	Pin Name	I/O	Output Format	Function and Operation
73	VCC			Back up 5V
74	VREF	I		A/D reference voltage input
75	AVSS			A/D GND
76	CSEL			Compression select
77,78	NC			Not used
79	KD0			Analog key input 0
80	KD1	I		Analog key input 1

Output Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

*PD5229A



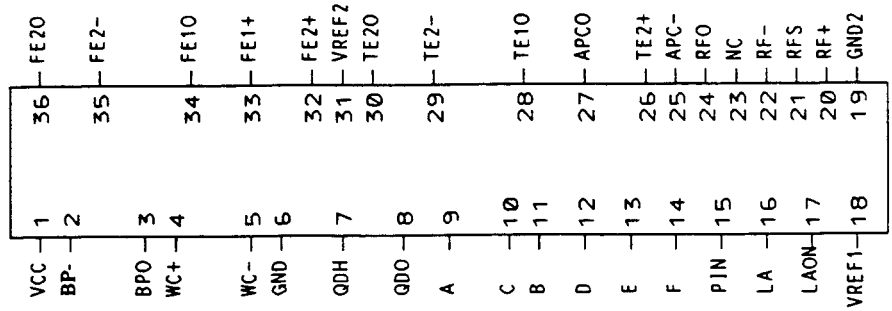
PA3026



●Pin Functions (UPC1347GS)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	VCC			
2	BP-	I		Vibration detect amplifier 1 inverter input
3	BPO	O		Vibration detect amplifier 1 output
4	WC+	I		Window comparator non-inverting input
5	WC-	I		Window comparator inverting input
6	GND			GND
7	QDH	I		Vibration detect amplifier 3 non-inverting input
8	QDO	O		Vibration detect amplifier 3 output
9	A	I		A signal input
10	C	I		C signal input
11	B	I		B signal input
12	D	I		D signal input
13	E	I		E signal input
14	F	I		F signal input
15	PIN	I		APC circuit PD amplifier input
16	LA	O		APC circuit LD amplifier output
17	LAON			Laser diode ON/OFF switching
18	VREF1			Reference voltage
19	GND2			GND
20	RF+	I		RF amplifier non-inverting input
21	RFS	O		RF summing virtual output
22	RF-	I		RF amplifier inverting input
23	NC			Not used
24	RFO	O		RF amplifier output
25	APC-	I		APC circuit PD amplifier inverting
26	TE2+	I		Tracking error amplifier 2 non-inverting input
27	APCO	O		APC circuit PD amplifier output
28	TE1O	O		Tracking error amplifier 1 output
29	TE2-	I		Tracking error amplifier 2 inverting input
30	TE2O	O		Tracking error amplifier 2 output
31	VREF2			Reference voltage
32	FE2+	I		Focus error amplifier 2 non-inverting input
33	FE1+	I		Focus error amplifier 1 non-inverting input
34	FE1O	O		Focus error amplifier 1 output
35	FE2-	I		Focus error amplifier 2 inverter input
36	FE2O	O		Focus error amplifier 2 output

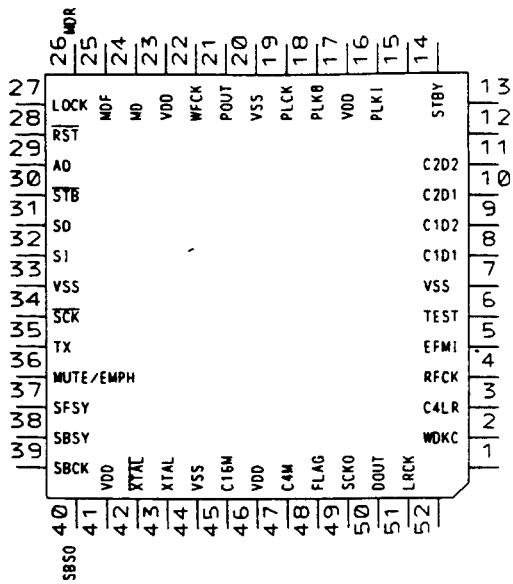
UPC1347GS



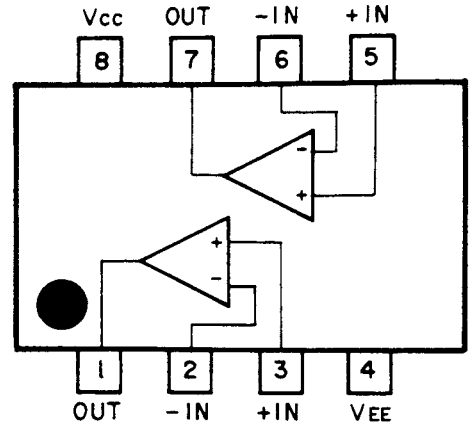
●Pin Functions (UPD6375GC)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC			Not used
2	WDCK	O		Output terminal for signal having double the frequency of LRCK
3	C4LR	O		Output terminal for signal having four the frequency of LRCK
4	RFCK	O		Oscillation clock divider signal,output pin for signal giving 1-frame sync.
5	EFMI	I		EFM signal input terminal
6	TEST			Test terminal
7	VSS			Gnd
8	C1D1	O		Output terminal indicating C1 error correction status
9	C1D2	O		Output terminal indicating C1 error correction status
10	C2D1	O		Output terminal indicating C2 error correction status
11	C2D2	O		Output terminal indicating C2 error correction status
12,13	NC			Not used
14	STBY	I		Standby input terminal
15	NC			Not used
16	PLK1	O		VCO output terminal for use in analog PLL selection
17	VDD			5V
18	PLK8	I		VCO output terminal for use in analog PLL selection
19	PLCK	O		Bit clock monitor terminal
20	VSS			Gnd
21	POUT	O		Output terminal for phase comparison between EFM signal and bit clock
22	WFCK	O		Signal issuring one-frame period by bit clock dividing signal
23	VDD			5V
24	MDS	O		Signal indicating spindle motor CLV servo control output status
25	MDF	O		Spindle motor CLV servo control positive direction output terminal
26	MDR	O		Spindle motor CLV servo control negative direction output terminal
27	LOCK	O		"H" when synchronization signal & frame counter output coincide at EFM demodulator
28	$\overline{RST}$	I		Reset signal input terminal
29	A0	O		Control signal distinguishing data from microcomputer
30	$\overline{STB}$	I		Signal latching serial data inside LSI
31	SO			Serial data input terminal
32	SI	I		Input terminal for data from microcomputer
33	VSS			Gnd
34	$\overline{SCK}$	I		Clock input terminal serial data input
35	TX	O		Digital audio interface data output terminal
36	MUTE/EMPH	O		Output for mute command decoding signal or sub-Q.commpand pre-emphasis data
37	SFSY	O		Signal indicating subcode one-frame synchronization
38	SBSY	O		Signal indicating head of subcode block
39	SBCK	I		Subcode data read clock input terminal
40	SBSO	O		Subcode data output terminal
41	VDD			5V
42	$\overline{XTAL}$	O		Osillation continuation terminal
43	XTAL	I		Oscillation continuation terminal
44	VSS			Gnd
45	C16M	O		Oscillation clock output terminal
46	VDD			5V
47	C4M	O		1/4 cycle output terminal for oscillation clock signals
48	FLAG	O		Flag sig. indicating that the current audio data output of incorrectable data
49	SCKO	O		Clock output terminal for audio serial data
50	DOUT	O		Serial audio data output terminal
51	LRCK	O		Signal distinguishing between left and right channel DOUT terminal output
52	NC			Not used

*UPD6375GC

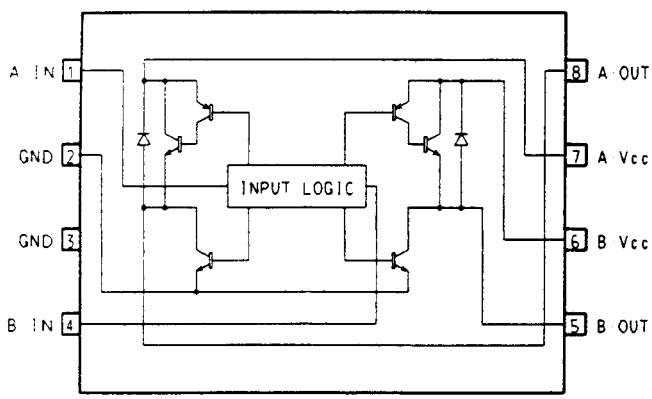


XRA4558F

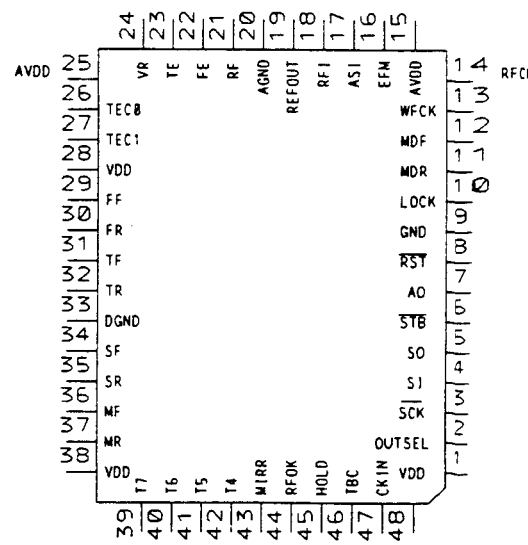


IC's marked by * are MOS type.
Be careful in handing them because they are very liable to be damaged by electrostatic induction.

MB3854PF



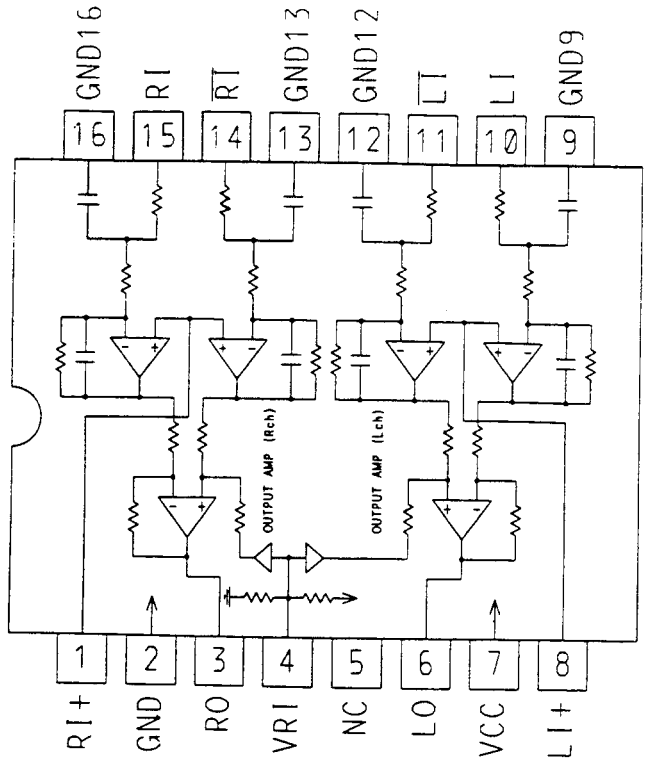
UPD6374AGH



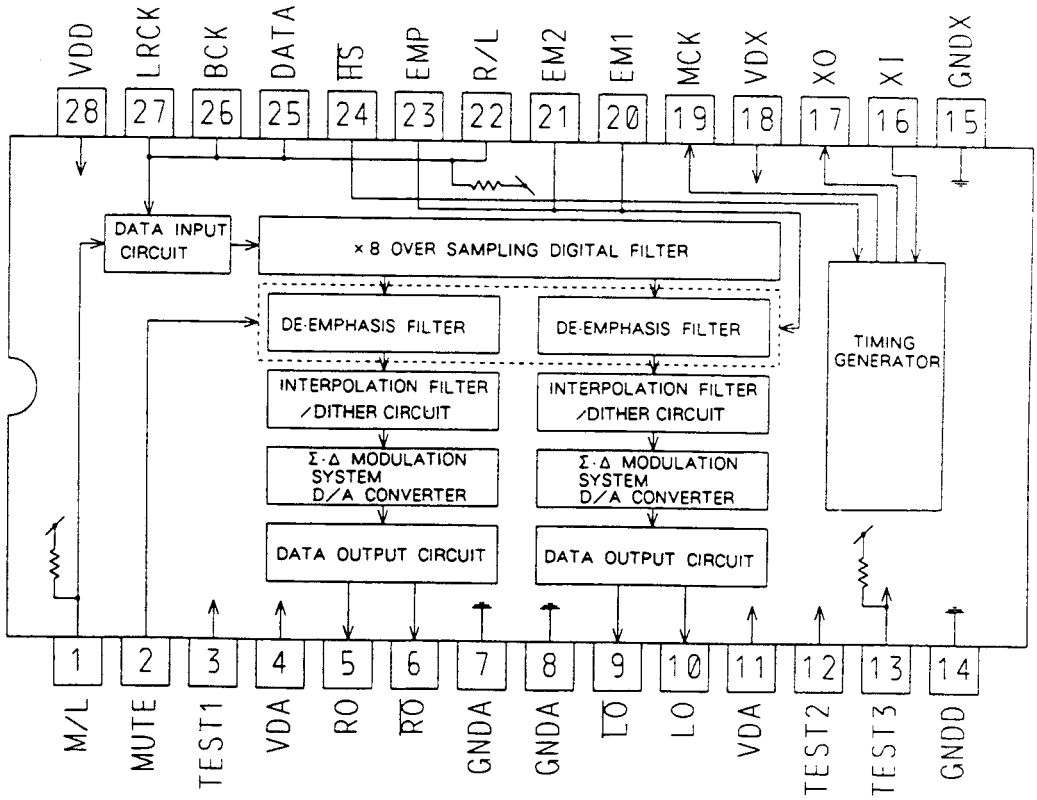
●Pin Functions(UPD6374AGH)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	VDD			Power supply
2	OUTSEL	I		Sets PWM output mode for the motor system
3	SCK	I		Clock input terminal for serial data input and output
4	SI	I		Serial data input
5	SO	O		Serial data and status signal output
6	STB	I		Signal latching serial data inside LSI
7	A0	I		Used in combination with stb A0 = "L" : Set in address register when STB is active A0 = "H" : Parameter setting when STB is active
8	RST	I		System reset
9	DGND			Logic circuit GND terminal
10	LOCK	I		Input terminal for detection of spindle servo error signal
11	MDR	I		Input terminal for detection of spindle servo error signal
12	MDF	I		Input terminal for detection of spindle servo error signal
13	WFCK	I		Input terminal for detection of spindle servo error signal
14	RFCK	I		Input terminal for detection of spindle servo error signal
15	AVDD			Positive power supply terminal for analog circuit
16	EFM	O		EFM signal output terminal
17	ASI	I		Level comparing input for RF signal comparison
18	RFI	I		Analog input terminal for EFM comparator
19	REFO	O		A/D converter midpint output terminal inside LSI
20	AGND			Analog circuit GND
21	RF	O		RF signal input terminal
22	FE	I		Focus error terminal
23	TE	I		Tracking error input terminal
24	VR	I		Input signal is quantified as follows:FS=88.2kHz,Resolution:6 bits The output takes place directly at microcomputer interface, that is, not via the filter block within LSI
25	AVDD			Positive power supply terminal for analog circuit
26	TECO	I		Tracking comparator input terminal
27	TECI	I		Tracking comparator input terminal
28	DVDD			Positive power supply terminal for logic circuit
29	FF	O		PWM positive output terminal for the focus loop filter
30	FR	O		PWM negative output terminal for the focus loop filter
31	TF	O		PWM positive output terminal for the tracking loop filter
32	TR	O		PWM negative output terminal for the tracking loop filter
33	DGND			Logic circuit GND terminal
34	SF	O		PWM positive output terminal for the thread loop filter
35	SR	O		PWM negative output terminal for the thread loop filter
36	MF	O		PWM positive output terminal for the spindle loop filter
37	MR	O		PWM negative output terminal for the spindle loop filter
38	DVDD			Positive power supply terminal for logic circuit
39	T7	I		Sets tracking PWM output mode
40	T6	I		Sets focus PWM output mode
41	T5	I		Selects motor modulation mode
42	T4	I		Selects between focus and tracking modulation mode
43	MIRR	O		MIRR detection signal output terminal
44	RFOK	O		RFOK detection signal terminal
45	HOLD	I		Hold control signal input terminal
46	TBC			Tracking bank switching terminal
47	CKIN	I		System clock input terminal
48	TEST	I		Test terminal

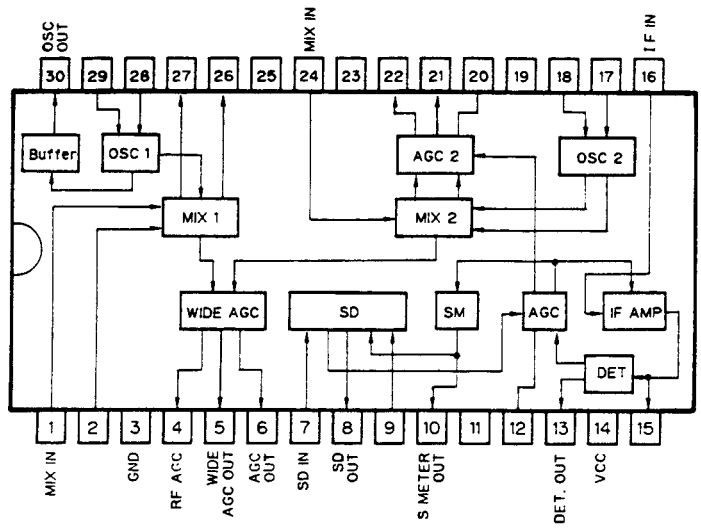
TA2009F



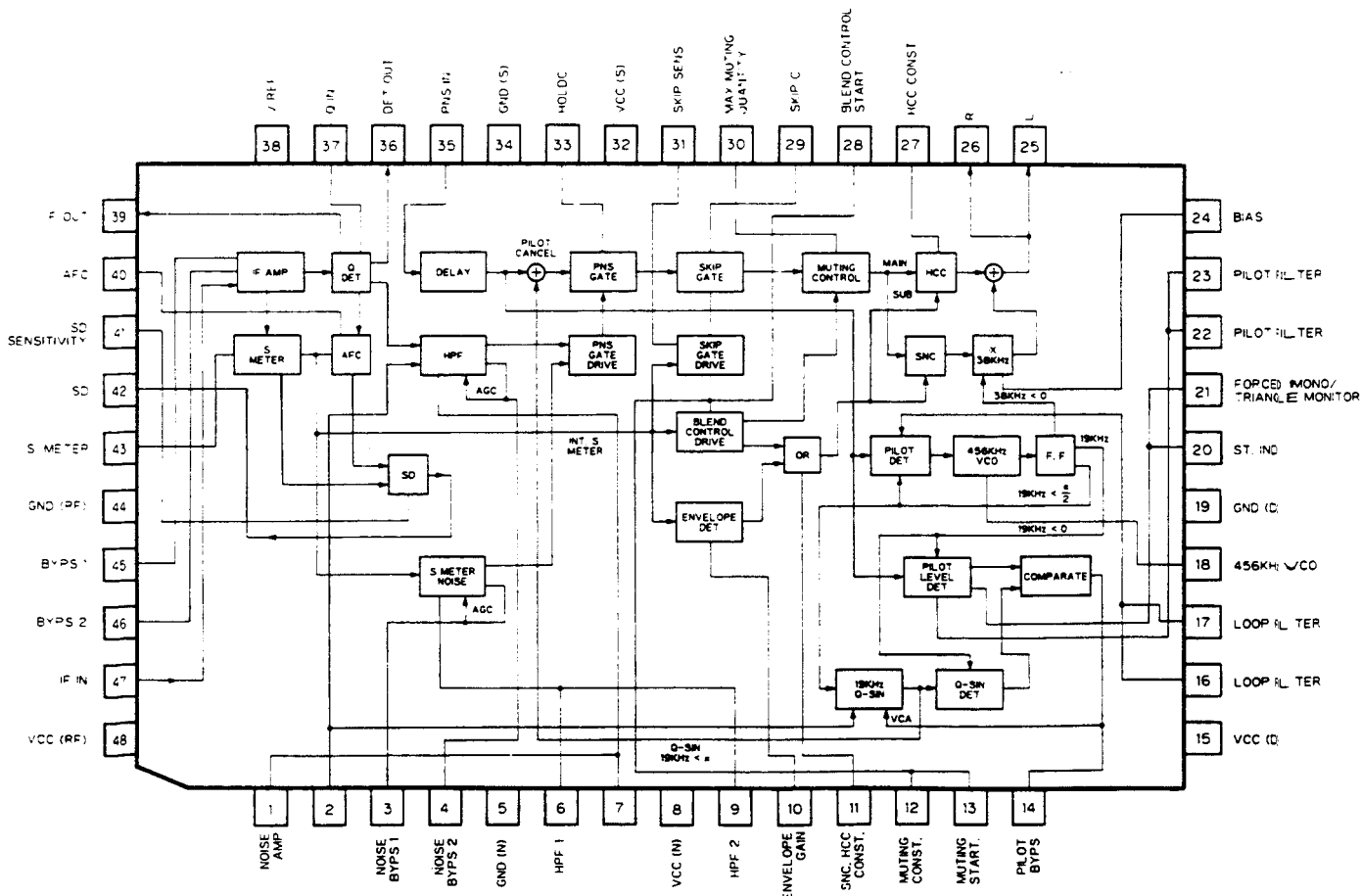
TC9237F-PK



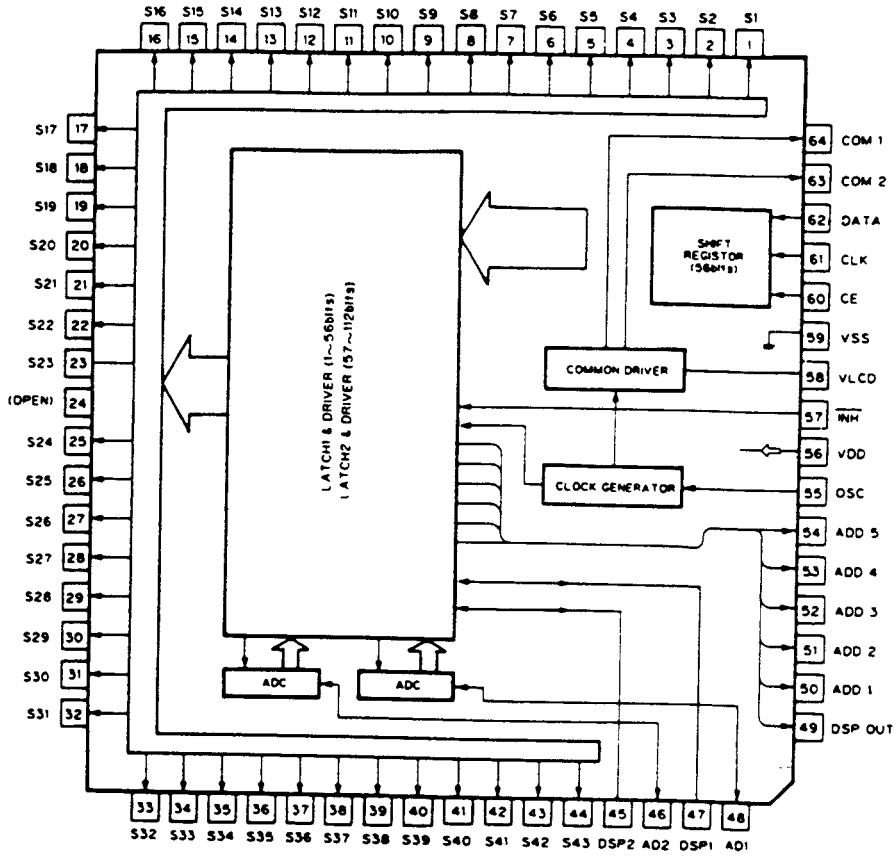
PA4017



PA4012B



LC7582E



●FM Front End (CWB1035)

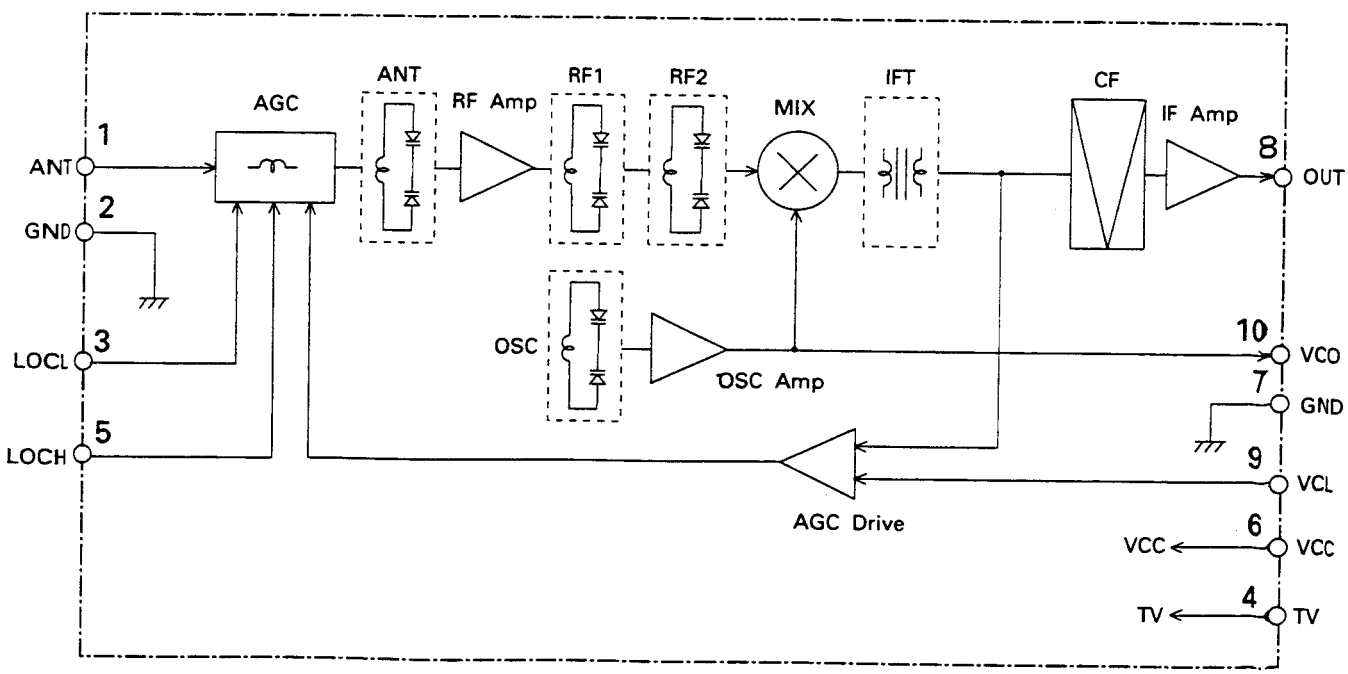


Fig. 45

●LCD(CAW1194)

SEGMENT

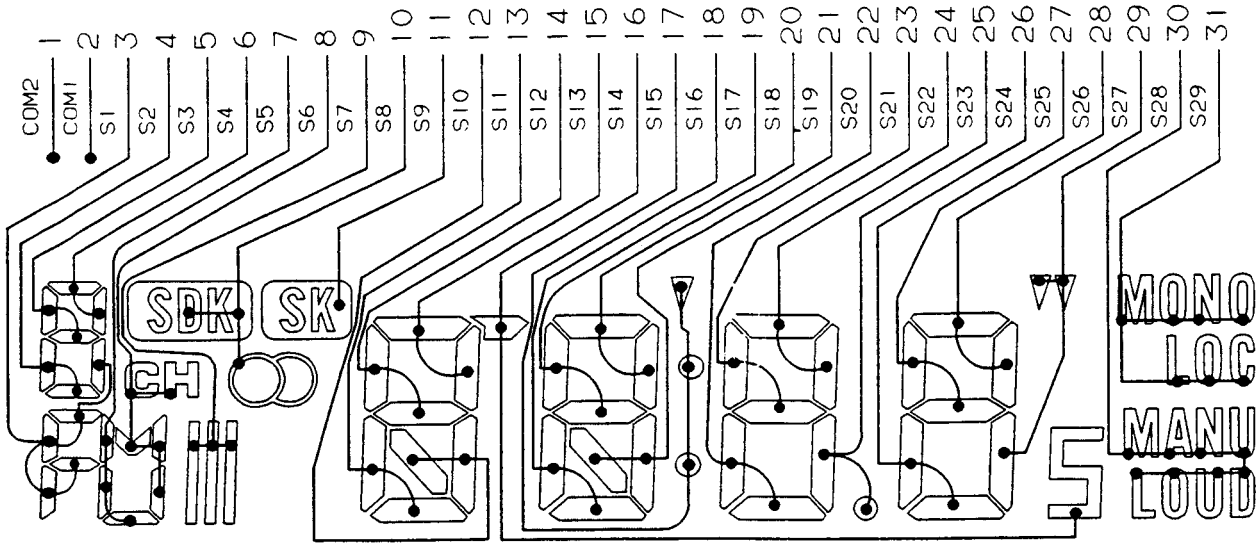


Fig. 46

COMMON

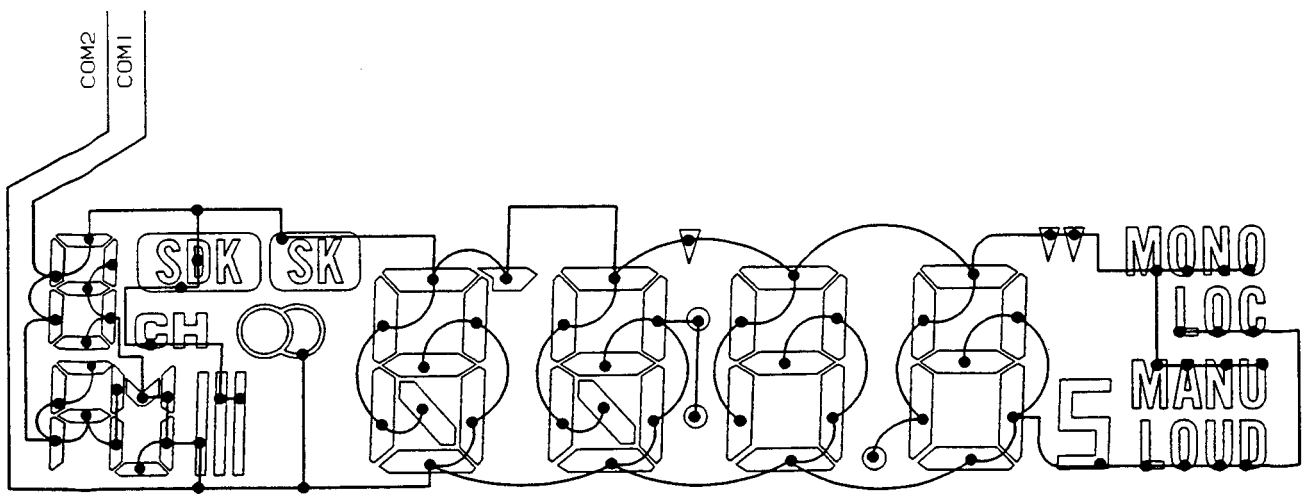


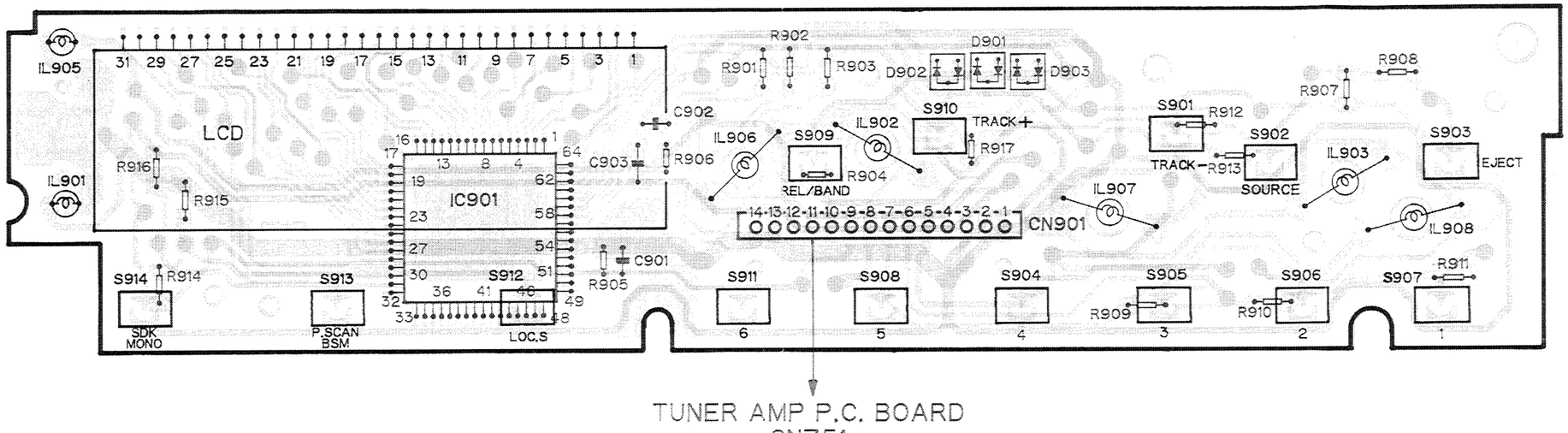
Fig. 47

5. CIRCUIT DIAGRAM AND P.C. BOARDS PATTERN

5.1 TUNER AMP UNIT AND KEY BOARD UNIT

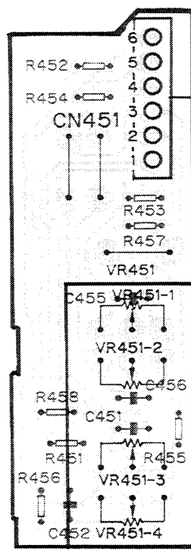
●Connection Diagram

KEY BOARD UNIT



TUNER AMP P.C. BOARD
CN751

TONE CONTROL P.C. BOARD



TUNER AMP P.C. BOARD

Q508 Q509 IC502 Q966
Q504 Q851 Q503 IC751 Q967 Q974 Q952 Q951 Q554 Q962 Q959 Q958
Q502 Q507 IC851 Q506 IC501 Q755 Q970 Q968 Q754 Q753 Q965 Q859 Q553 Q956 Q860 Q863 Q957 Q961 Q960
IC. Q Q854 Q852 IC854 Q853 Q602 Q505 Q501 IC752 Q971 Q969 Q601 Q752 Q751 Q953 Q864 IC853 IC852 IC451 Q855 Q856 Q857 Q858 Q861 IC551 Q862

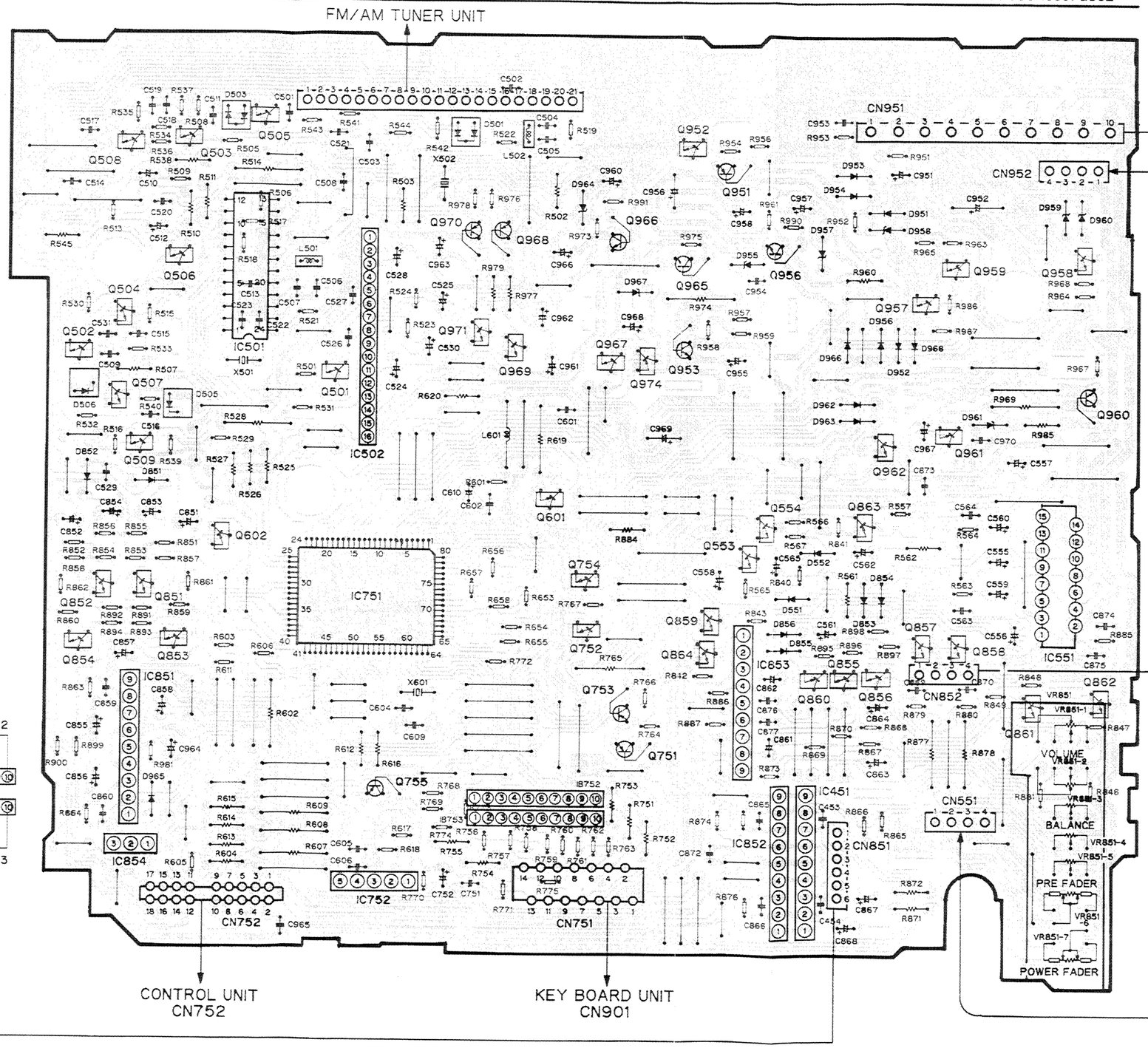


Fig. 48

●Circuit Diagram

TUNER AMP P.C.BOARD

IC502 KHA172A SDK H.I.C

MIXING

MUTE

BALANCE LOUDNESS VO

IC851 (1/2) NJM4558S

IC851 (2/2) NJM4558S

IC853(1/2) NJM4558S

IC853(2/2) NJM4558S

FM VCO AMP

AMIF AMP

LOOP FILTER

PLL CONTROL

IC501 LC7218HS

FM/AM TUNER UNIT

FM(100%)-16dBs

AM(30%)-29.4dBs

CD(0dB)1.5dBs

1.5dBs

SLIN

SRIN

4.4V AUDIO REF.

VR851

LOUDNESS CONTROL

SYSTEM CONTROL

IC751 PD4473A

RESET

IC752 M51957AL

FROM CONTROL UNIT

CN752 (TOP VIW)

KEY BOARD UNIT

LCD DRIVER IC901 LC7582E

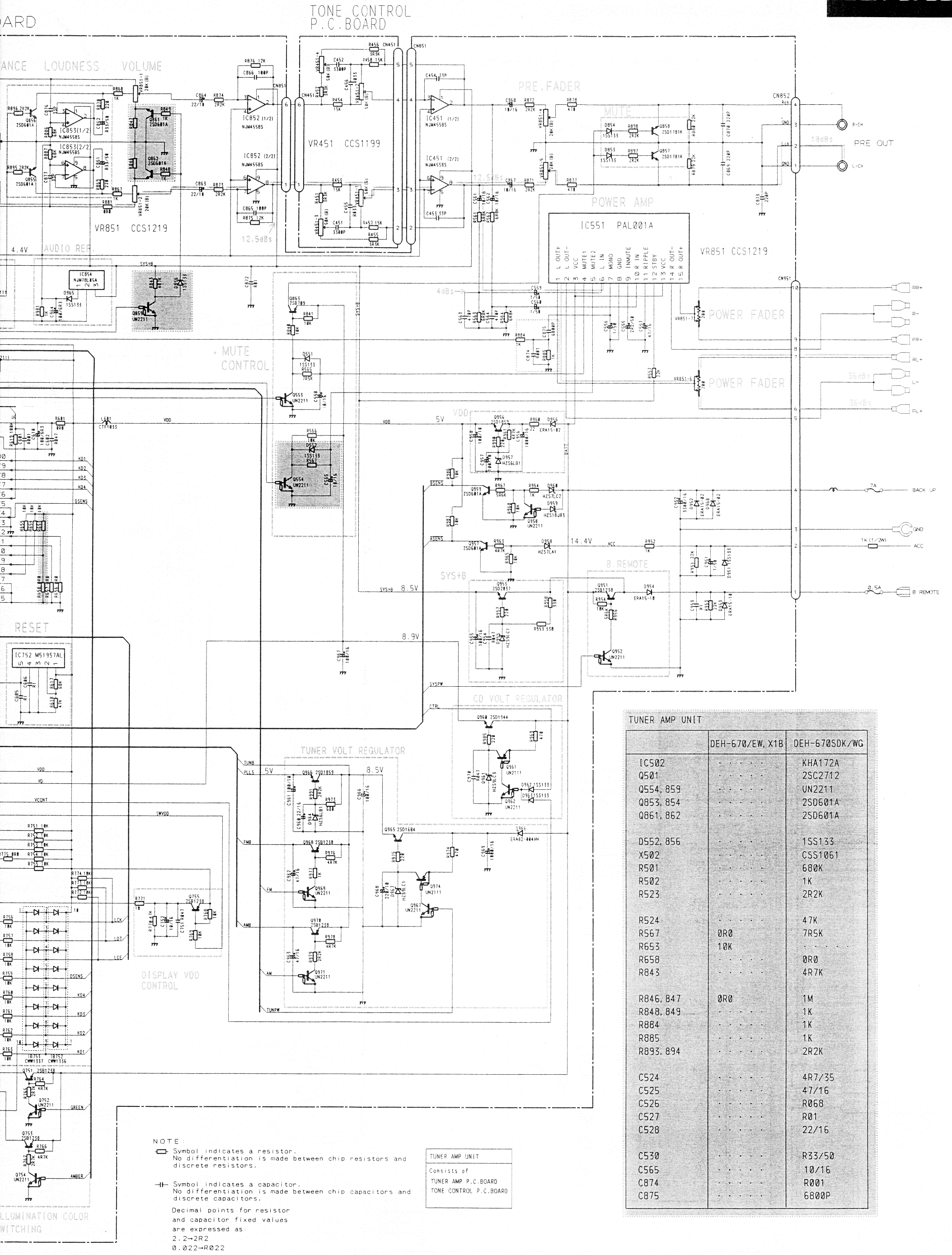
LCD CAW1194

S901 TRACK-
S902 SOURCE
S903 EJECT
S904 4
S905 3
S906 2
S907 1
S908 5
S909 BAND
S910 TRACK+
S911 6
S912 LOC.S
S913 P.SCAN BSM
S914 SDK MONO

MONO LOC MANU LOUD

ILLUMINATION COLOR SWITCHING

1 2 3 4 5



NOTE:

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

TUNER AMP UNIT
Consists of
TUNER AMP P.C.BOARD
TONE CONTROL P.C.BOARD

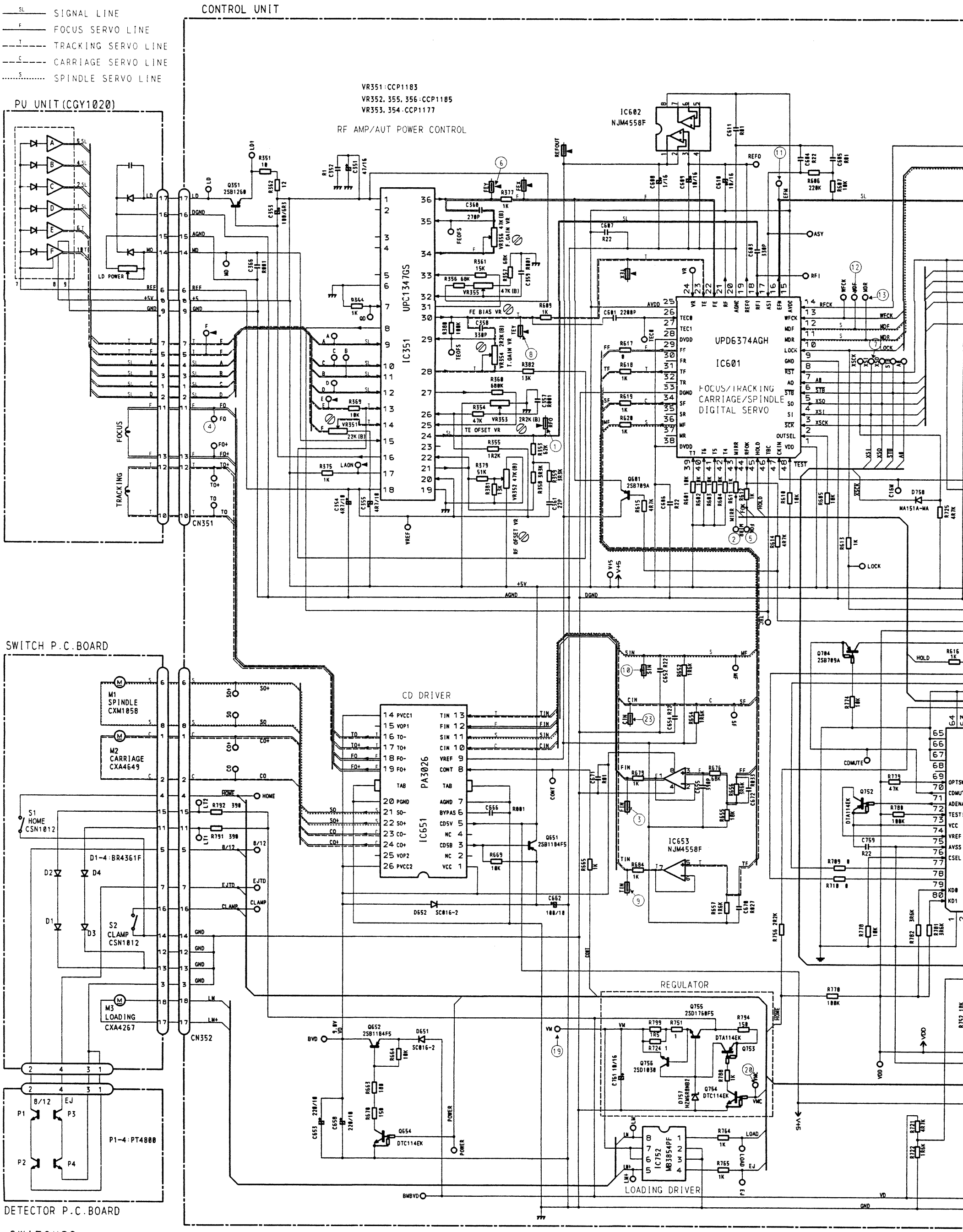
TUNER AMP UNIT

	DEH-670/EW, X1B	DEH-670SDK/WG
IC502	. . . . .	KHA172A
Q501	. . . . .	2SC2712
Q554, 859	. . . . .	UN2211
Q853, 854	. . . . .	2SD601A
Q861, 862	. . . . .	2SD601A
D552, 856	. . . . .	1SS133
X502	. . . . .	CSS1061
R501	. . . . .	680K
R502	. . . . .	1K
R523	. . . . .	2R2K
R524	. . . . .	47K
R567	0R0	7R5K
R653	10K	. . . . .
R658	. . . . .	0R0
R843	. . . . .	4R7K
R846, 847	0R0	1M
R848, 849	. . . . .	1K
R884	. . . . .	1K
R885	. . . . .	1K
R893, 894	. . . . .	2R2K
C524	. . . . .	4R7/35
C525	. . . . .	47/16
C526	. . . . .	R068
C527	. . . . .	R01
C528	. . . . .	22/16
C530	. . . . .	R33/50
C565	. . . . .	10/16
C874	. . . . .	R001
C875	. . . . .	6800P

Fig. 49

5.2 CD MECHANISM MODULE

●Circuit Diagram



SWITCHES:
MISCELLANEOUS
S1 : HOME SWITCH ..... ON-OFF
S2 : CLAMP SWITCH ..... ON-OFF
The underlined indicates the switch position.

NOTE :

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

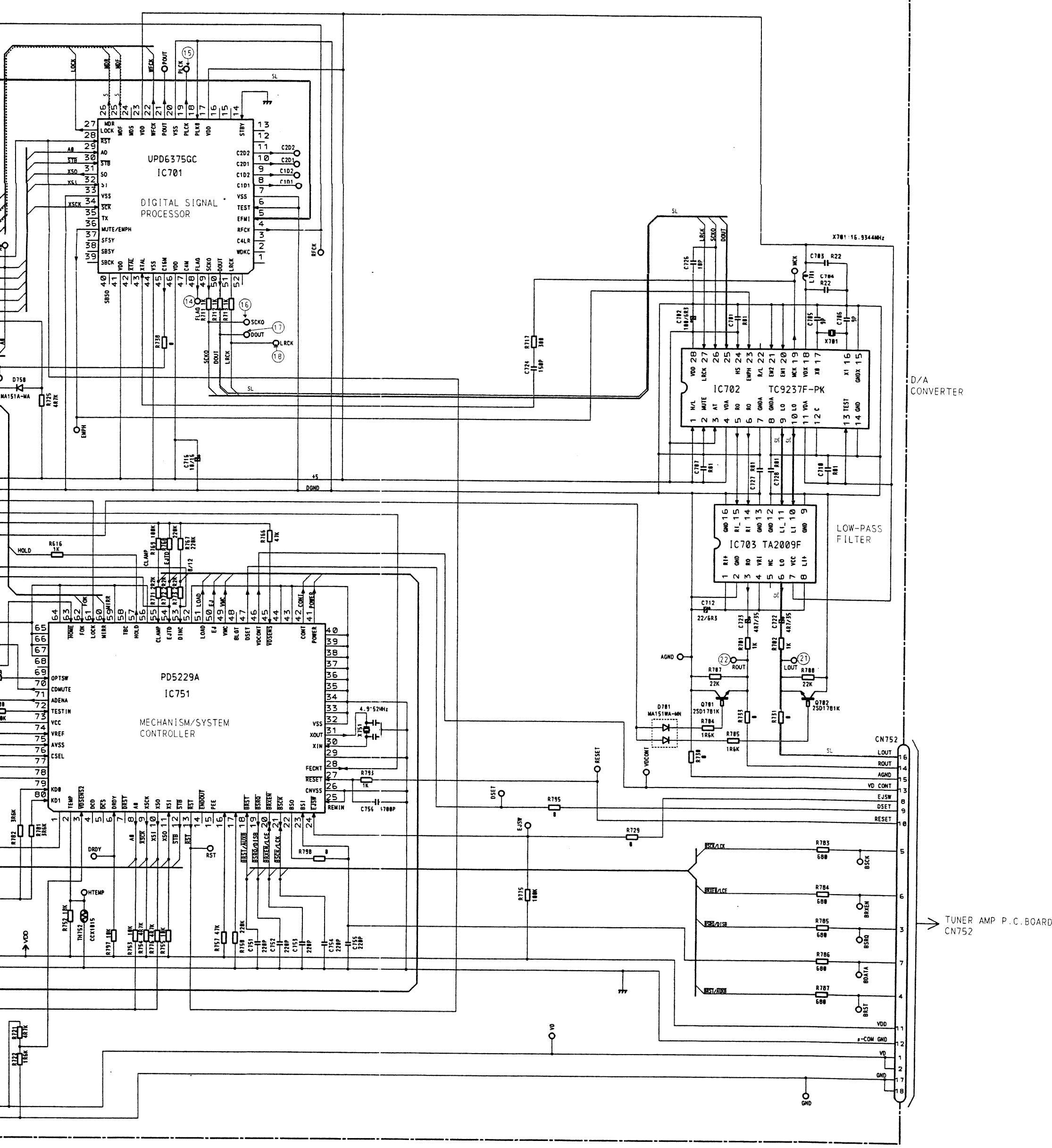
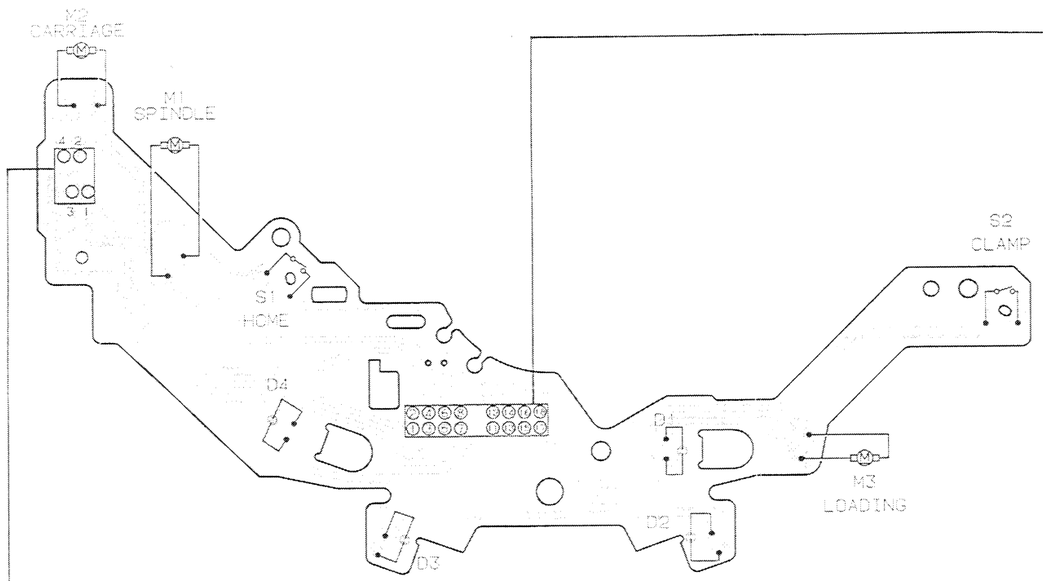


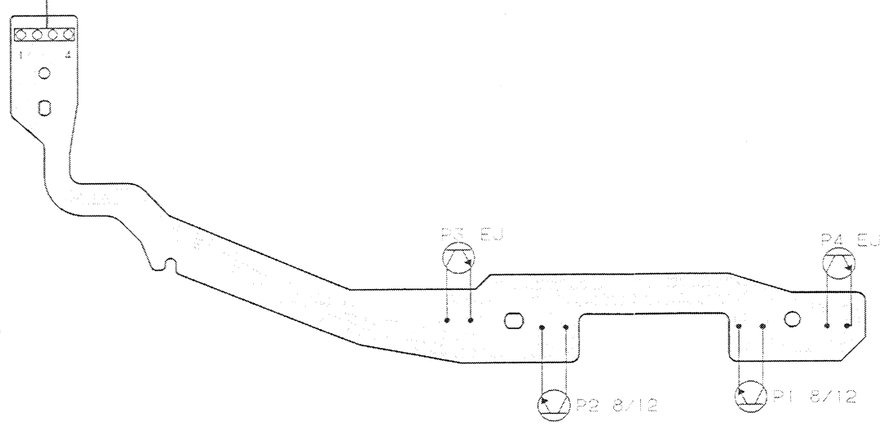
Fig. 50

●Connection Diagram

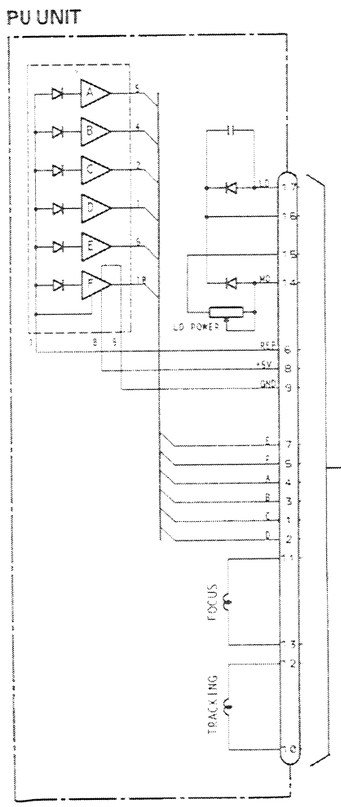
SWITCH P.C. BOARD



DETECTOR P.C. BOARD

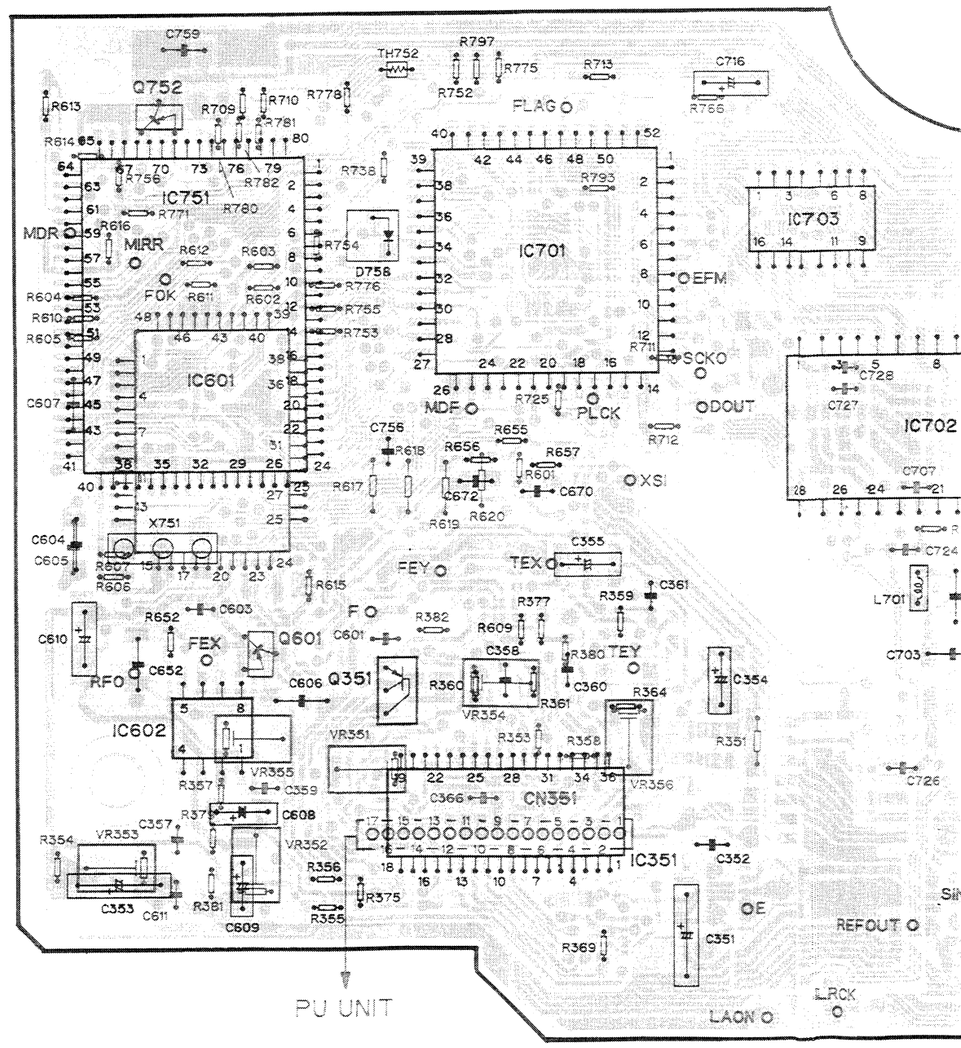


PU UNIT

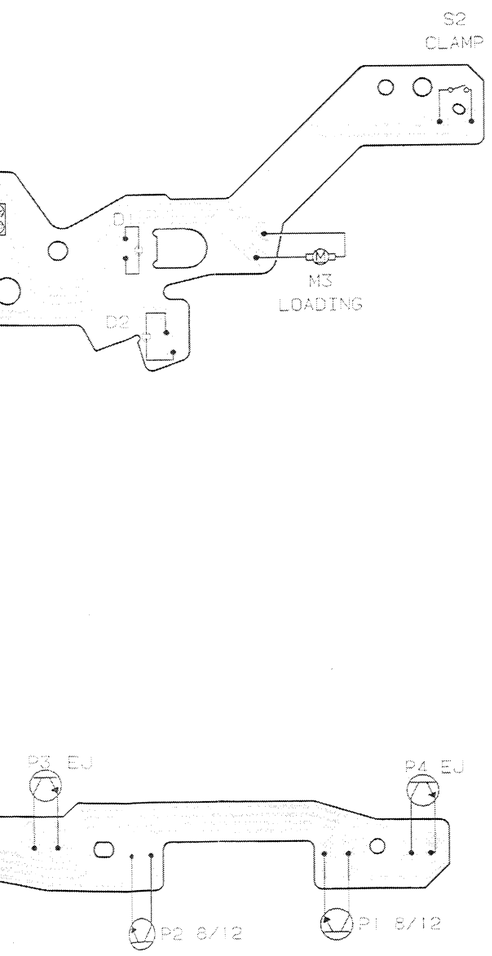


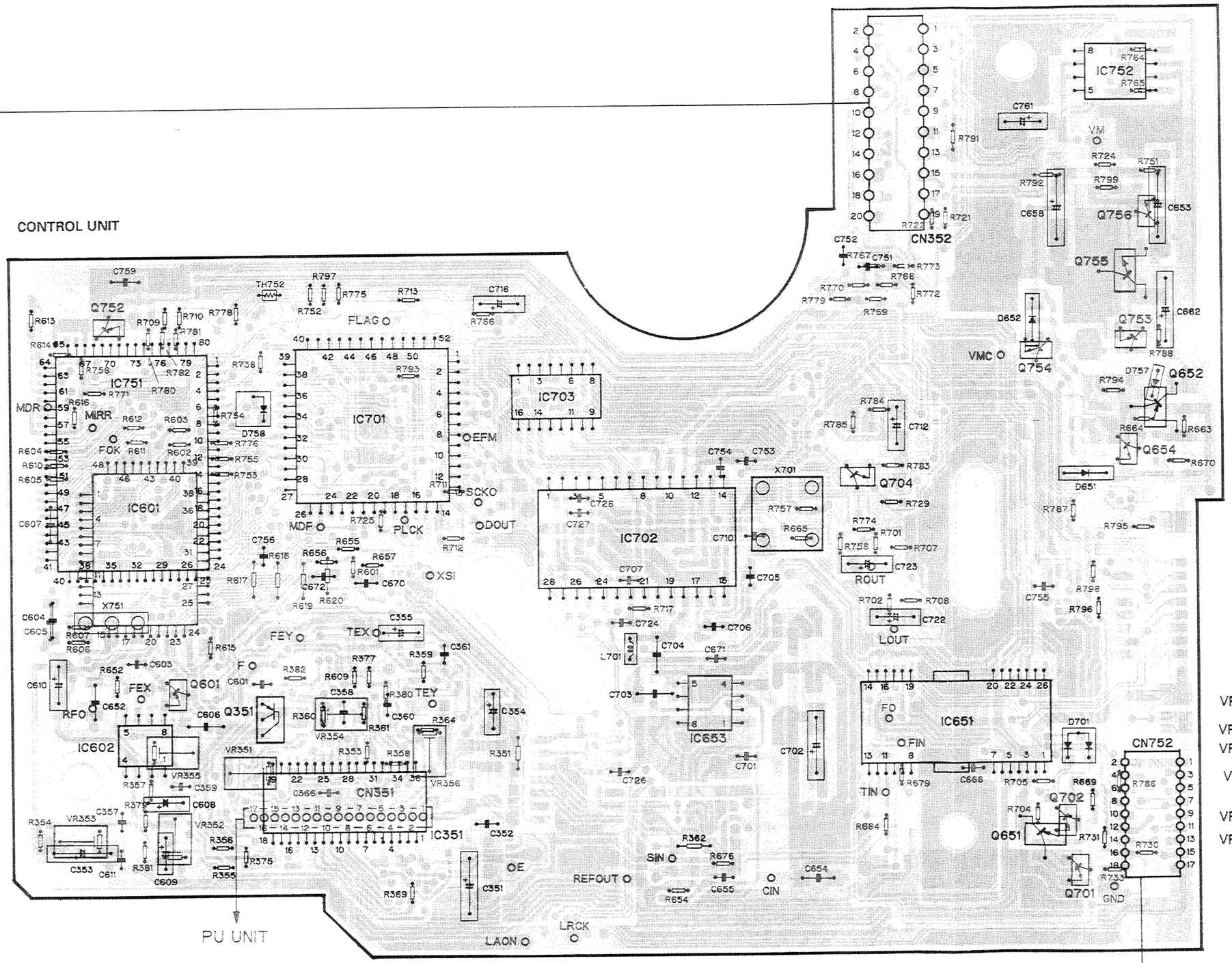
CONTROL UNIT
CN351

CONTROL UNIT



CONTROL UNIT





ADJ	IC. Q
	IC752
	Q756
	Q755
	Q752 Q753
	Q754
	IC751 IC703
	IC701 Q652
	Q654
	Q704
	IC601
	IC702
	Q601
VR354	IC653 IC651
VR355	IC602 Q351
VR356	
VR351	IC351 Q702
VR353	Q651
VR352	
	Q701

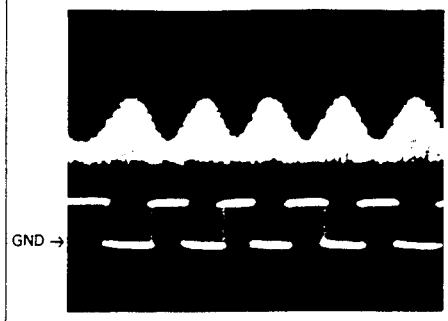
Fig. 51

●Wave Forms

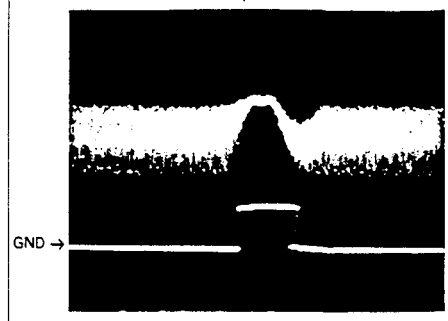
Note: 1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFOUT: 2.5V

① RFO 0.5V/div. 0.2μs/div.
Normal mode: play

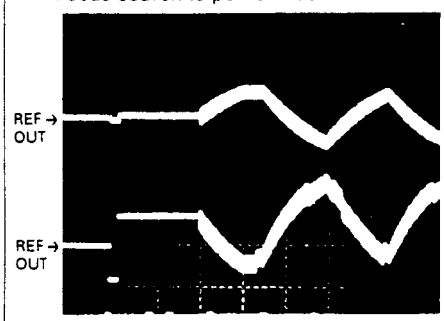
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Test mode: Tracking open



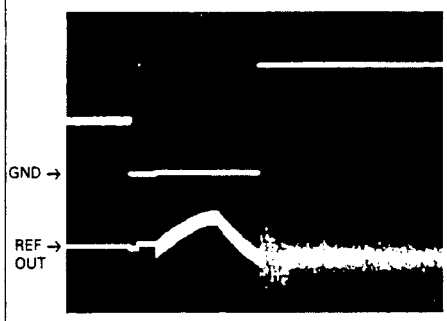
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Normal mode: The defect part passes 800μm.



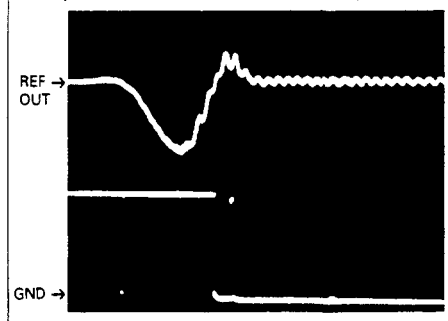
③ CH1: FIN 1V/div.
④ CH2: FO 2V/div. 0.5s/div.
Test mode: Connect the FEX to REFOUT.
Focus search is performed.



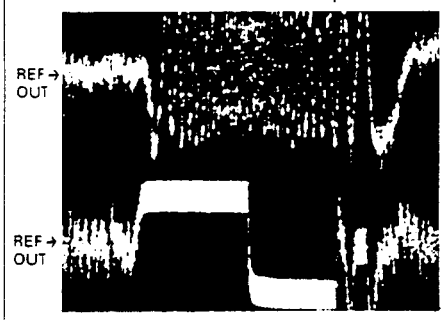
⑤ CH1: FOK 2V/div.
③ CH2: FIN 1V/div. 0.5s/div.
Normal mode: Focus close



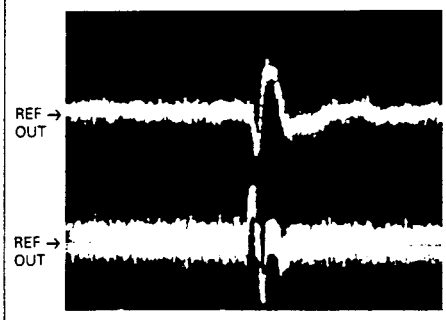
⑥ CH1: FEY 1V/div.
⑦ CH2: XSO 2V/div. 2ms/div.
Normal mode: Focus close
(The lens moves DOWN → UP)



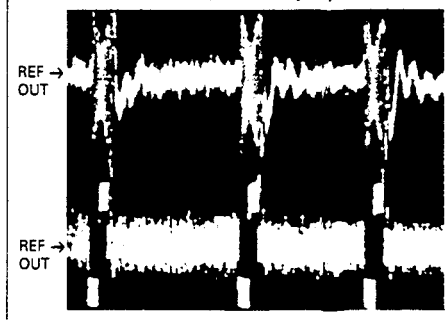
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Normal mode: Brake wave from when track search is perfromed.



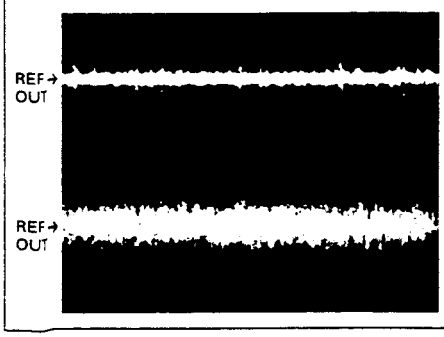
⑧ CH1: TEY 1V/div.
⑨ CH2: TIN 0.5V/div. 1ms/div.
Normal mode: single jump



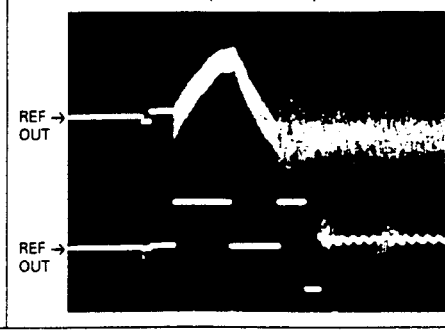
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 5ms/div.
Normal mode: Track search (32 track jump)



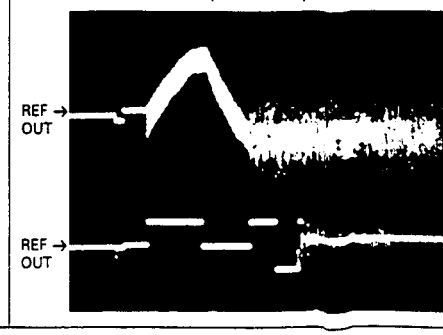
⑥ CH1: FEY 0.2V/div.
③ CH2: FIN 0.5V/div. 20ms/div.
Normal mode: Play



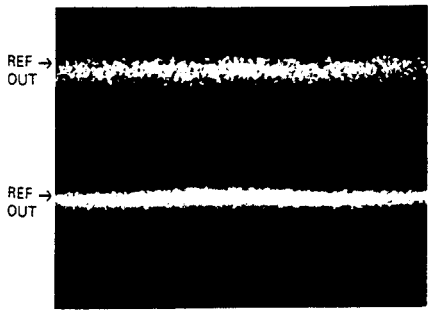
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus search (12cm disc)



③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus search (8cm disc)

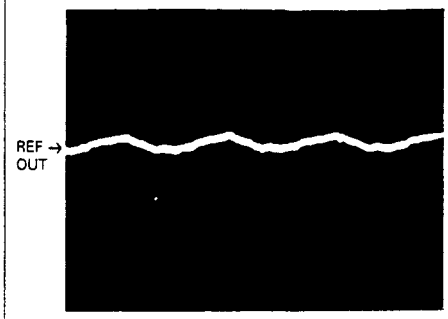


⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 20ms/div.
Normal mode: Play

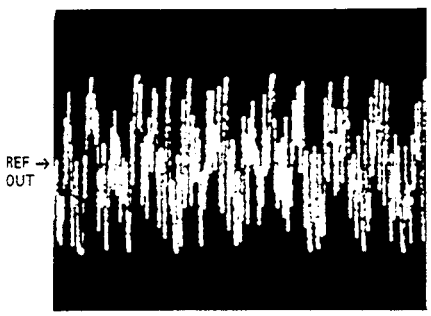


⑧ CH1: TEY 1V/div. 5ms/div.
㉓ CH2: CIN
Normal mode: Search

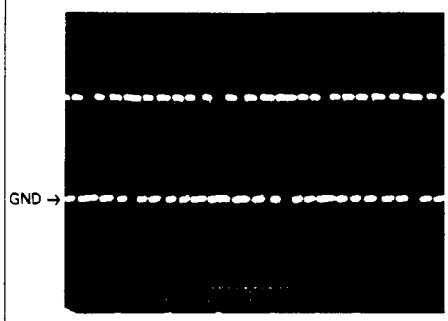
⑩ SIN 0.5V/div. 50ms/div.
Normal mode: Play (12cm disc)



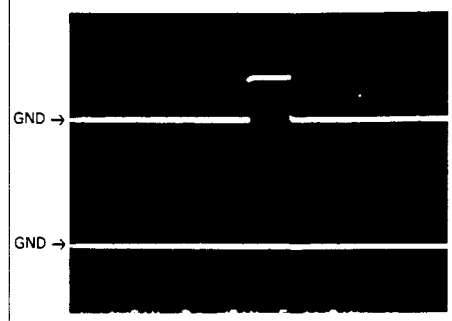
⑩ SIN 0.5V/div. 10ms/div.
Search (12cm disc)



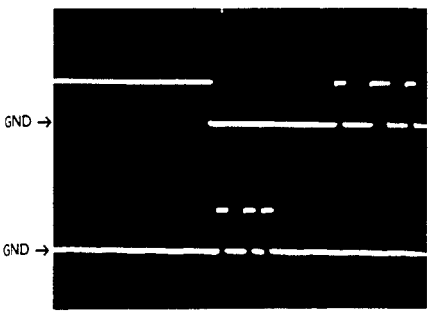
⑪ EFM 2V/div. 5µs/div.
Play



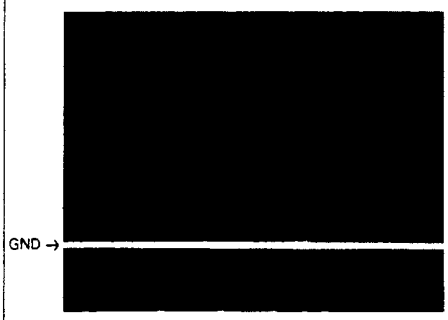
⑫ CH1: MDF 5V/div.
⑬ CH2: MDR 5V/div. 2ms/div.
Play



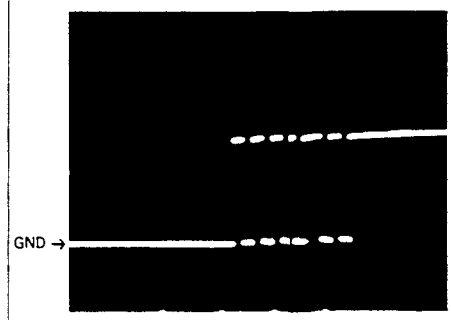
⑫ CH1: MDF 5V/div.
⑬ CH2: MDR 5V/div. 10ms/div.
Search



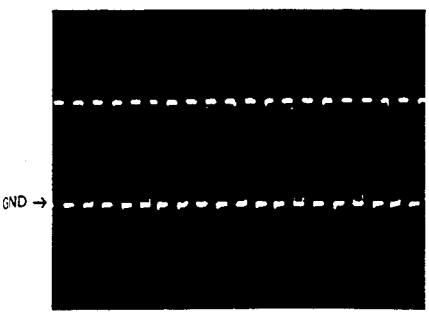
⑭ FLAG 2V/div. 0.1ms/div.
Play



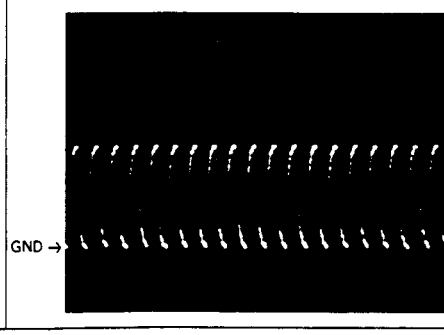
⑭ FLAG 2V/div. 0.1ms/div.
Search



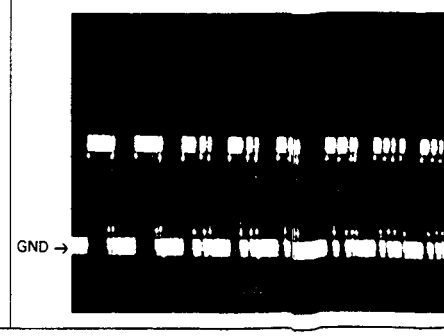
⑮ PLCK 2V/div. 0.5µs/div.
Play

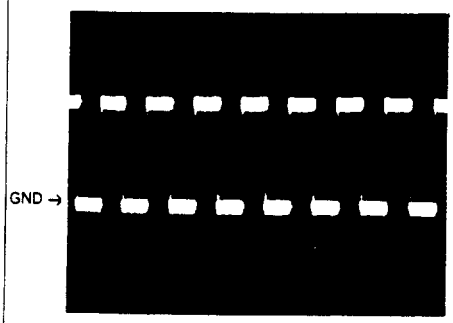
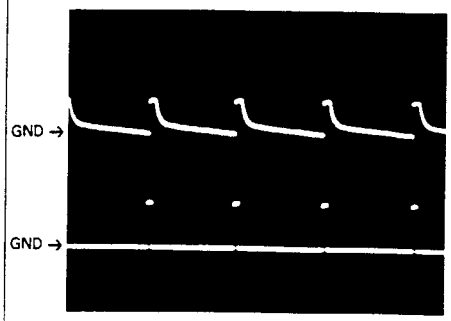
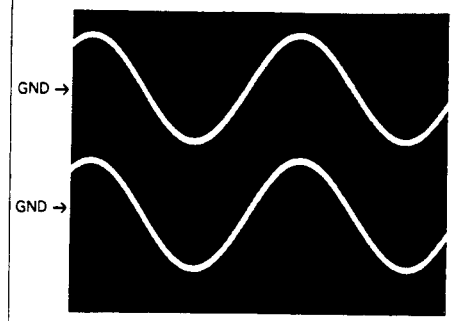


⑯ SCKO 2V/div. 1µs/div.
Play



⑰ Dout 2v/div. 10µs/div.
Play



⑱ LRCK 2V/div. 20µs/div. Play  	⑲ CH1: VM 5V/div. 50ms/div. ⑳ CH2: VMC 5V/div. Normal mode: No disc  	㉑ CH1: Lout 1V/div. 0.2ms/div. ㉒ CH2: Rout 1V/div. Play (1kHz) 

5.3 FM/AM TUNER UNIT (DEH-670SDK/GR)

●Circuit Diagram

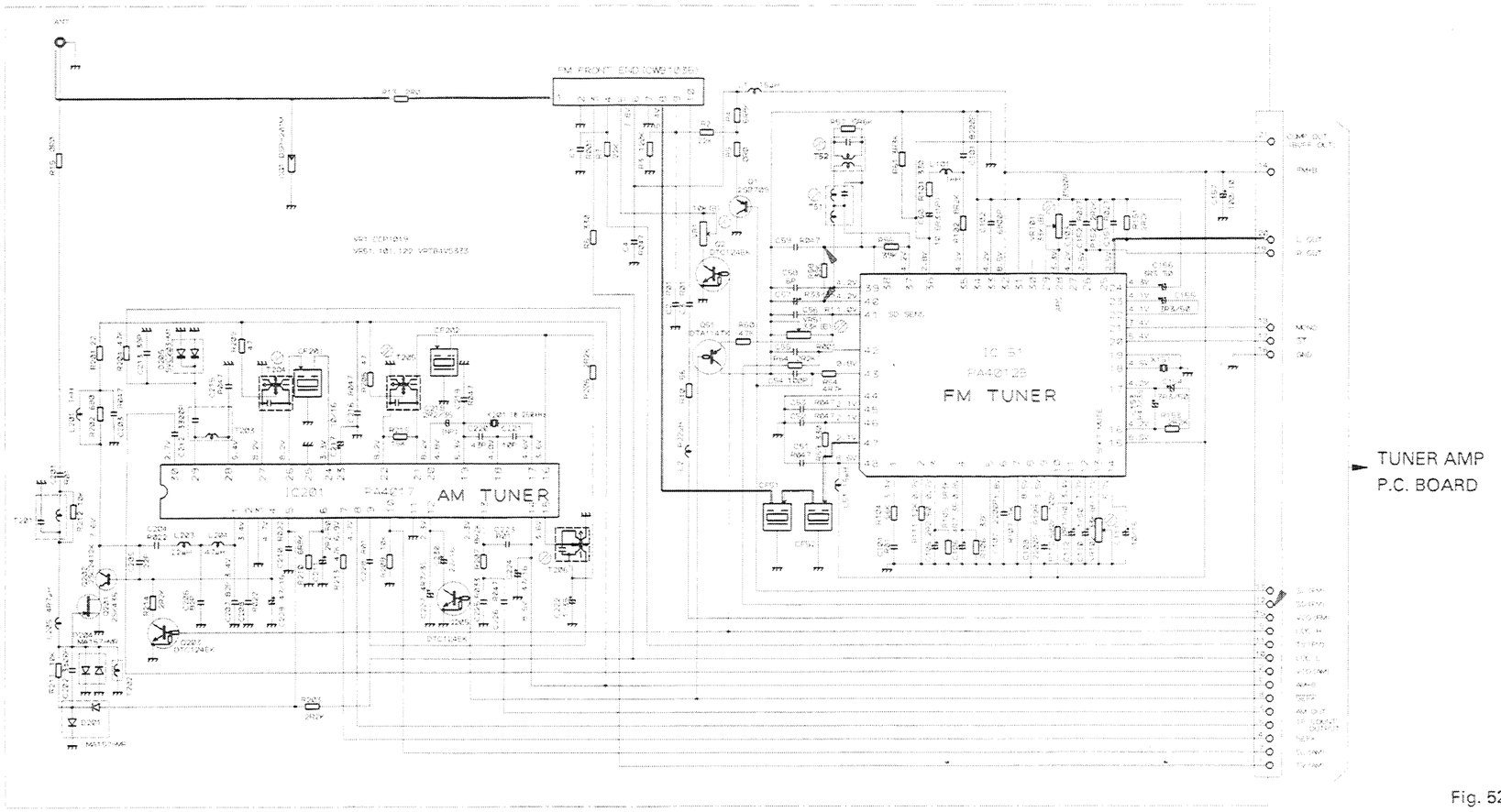


Fig. 52

NOTE

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
Ex. 2.2→2R2
Ex. 0.022→R022

●Connection Diagram

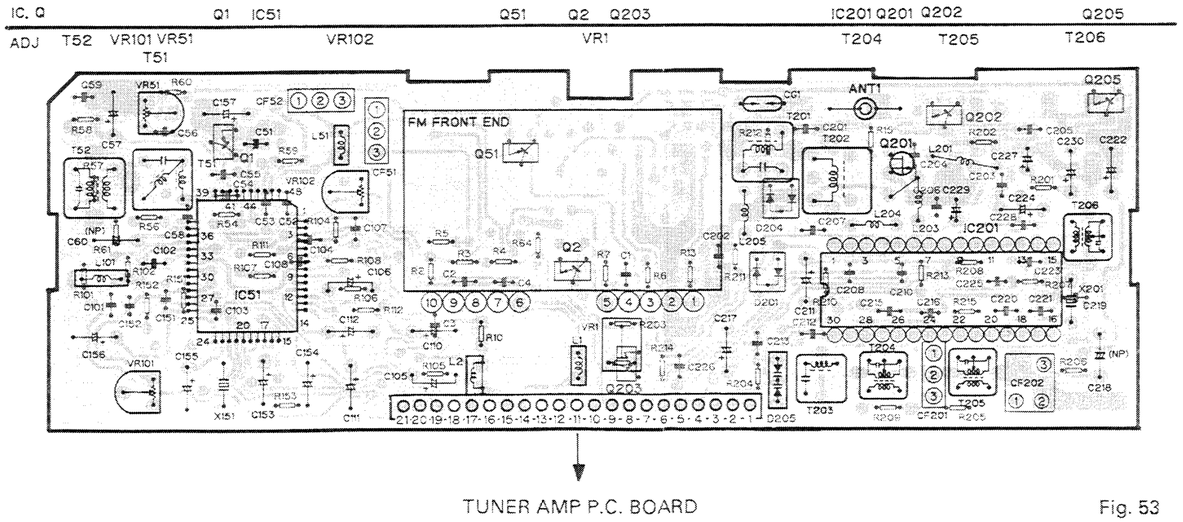
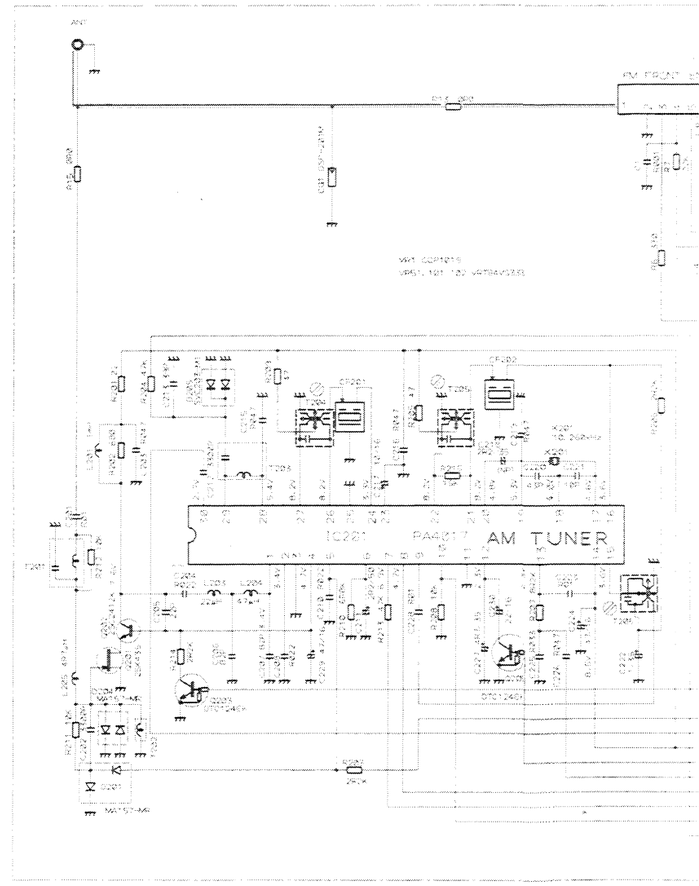


Fig. 53

5.4 FM/AM TUNER UNIT (DEH-670/EW, X1B)

●Circuit Diagram



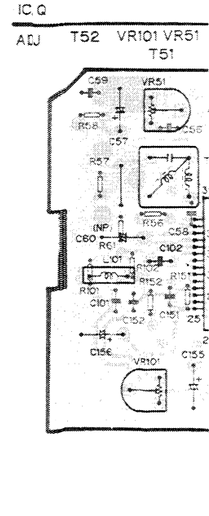
NOTE

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
Ex. 2.2→2R2
Ex. 0.022→R022

●Connection Diagram



5.4 FM/AM TUNER UNIT (DEH-670/EW, X1B)

●Circuit Diagram

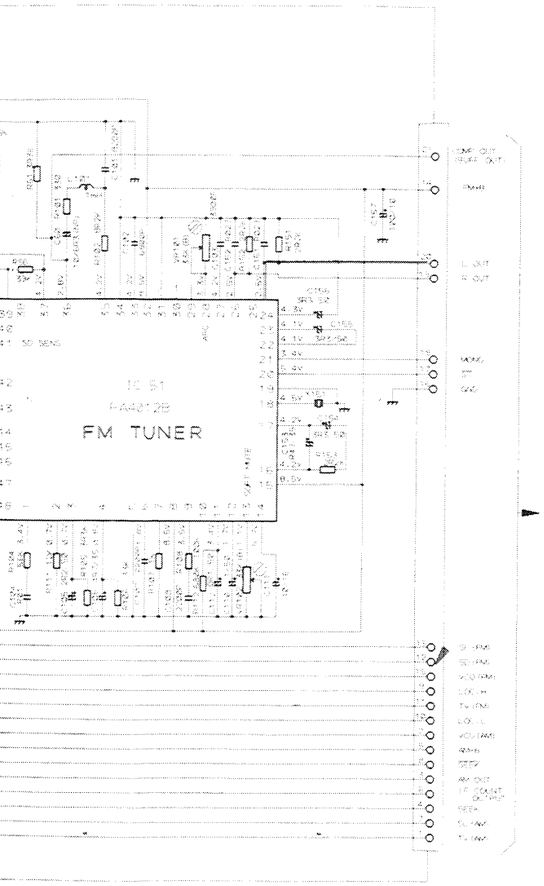


Fig. 52

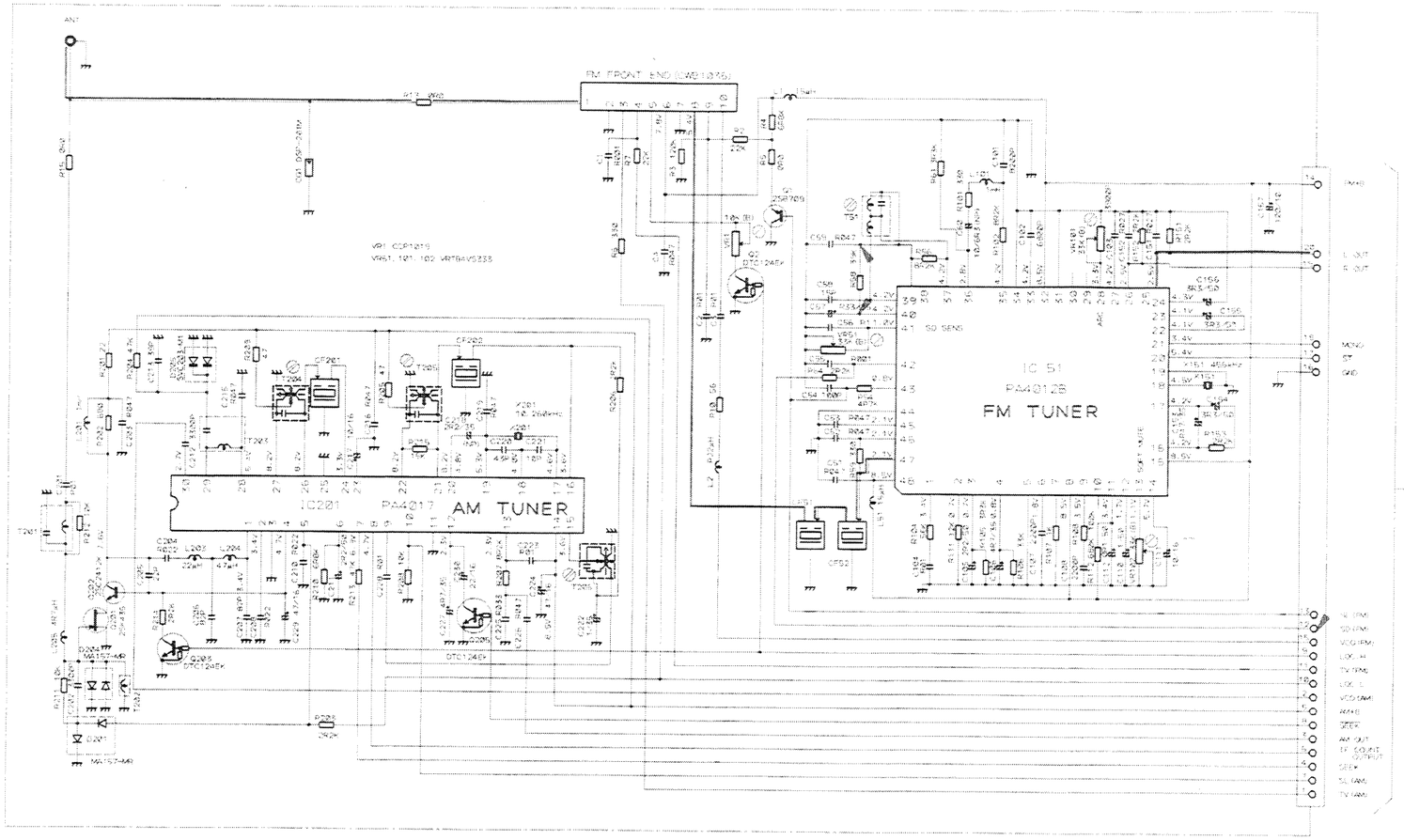


Fig. 54

NOTE

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
2.2→2R2
0.022→R022

●Connection Diagram

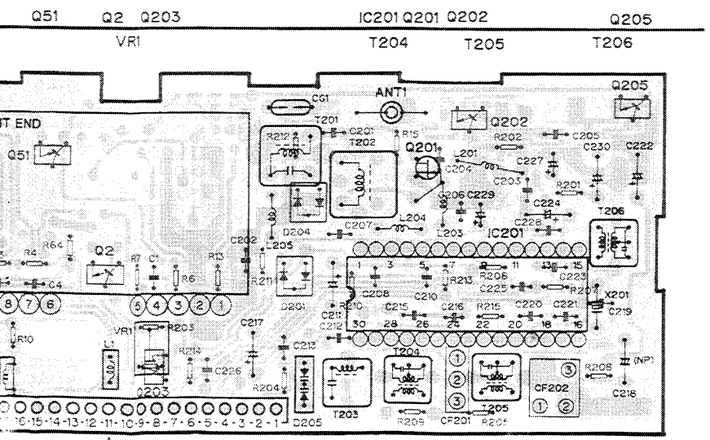


Fig. 53

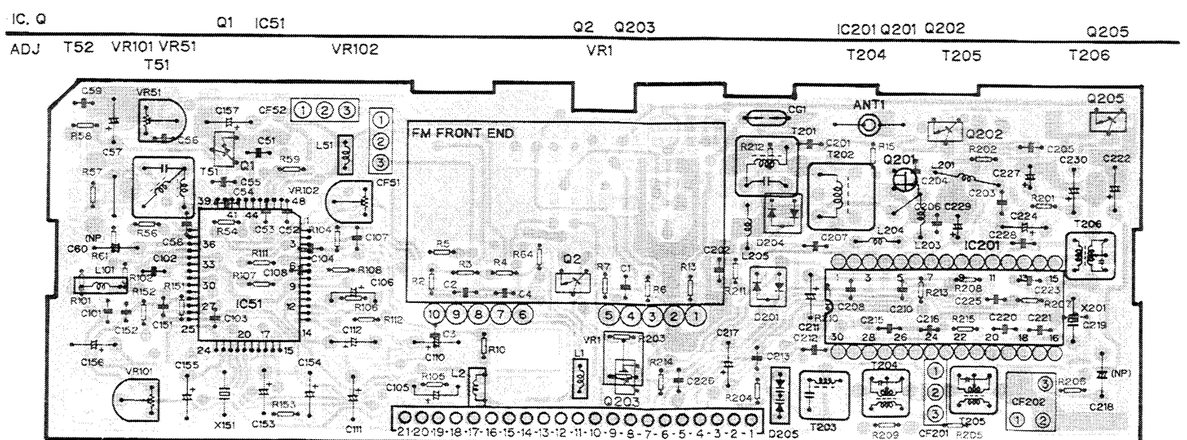


Fig. 55

6. CHASSIS EXPLODED VIEW

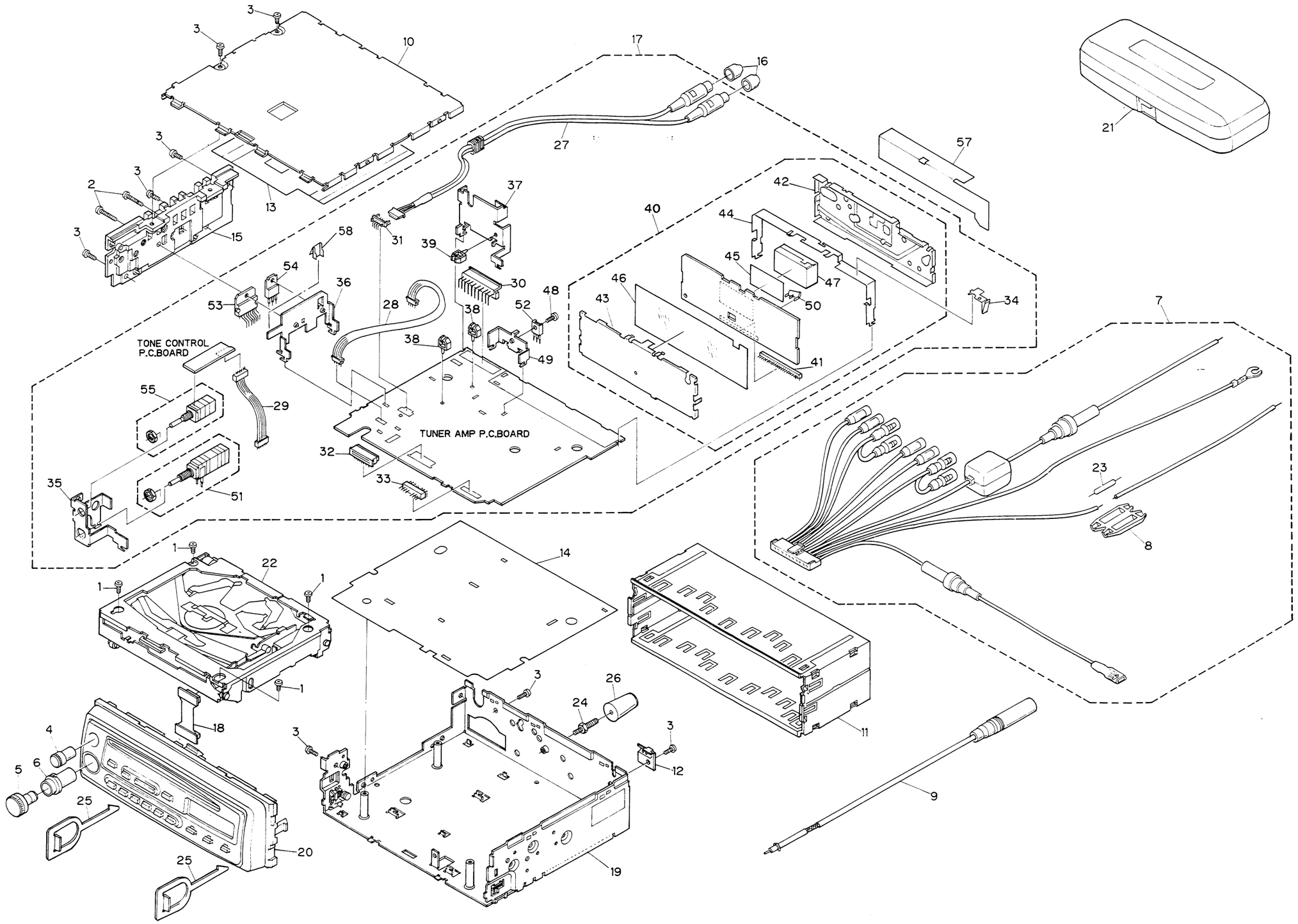


Fig. 56

7.GRILLE ASSY EXPLODED VIEW

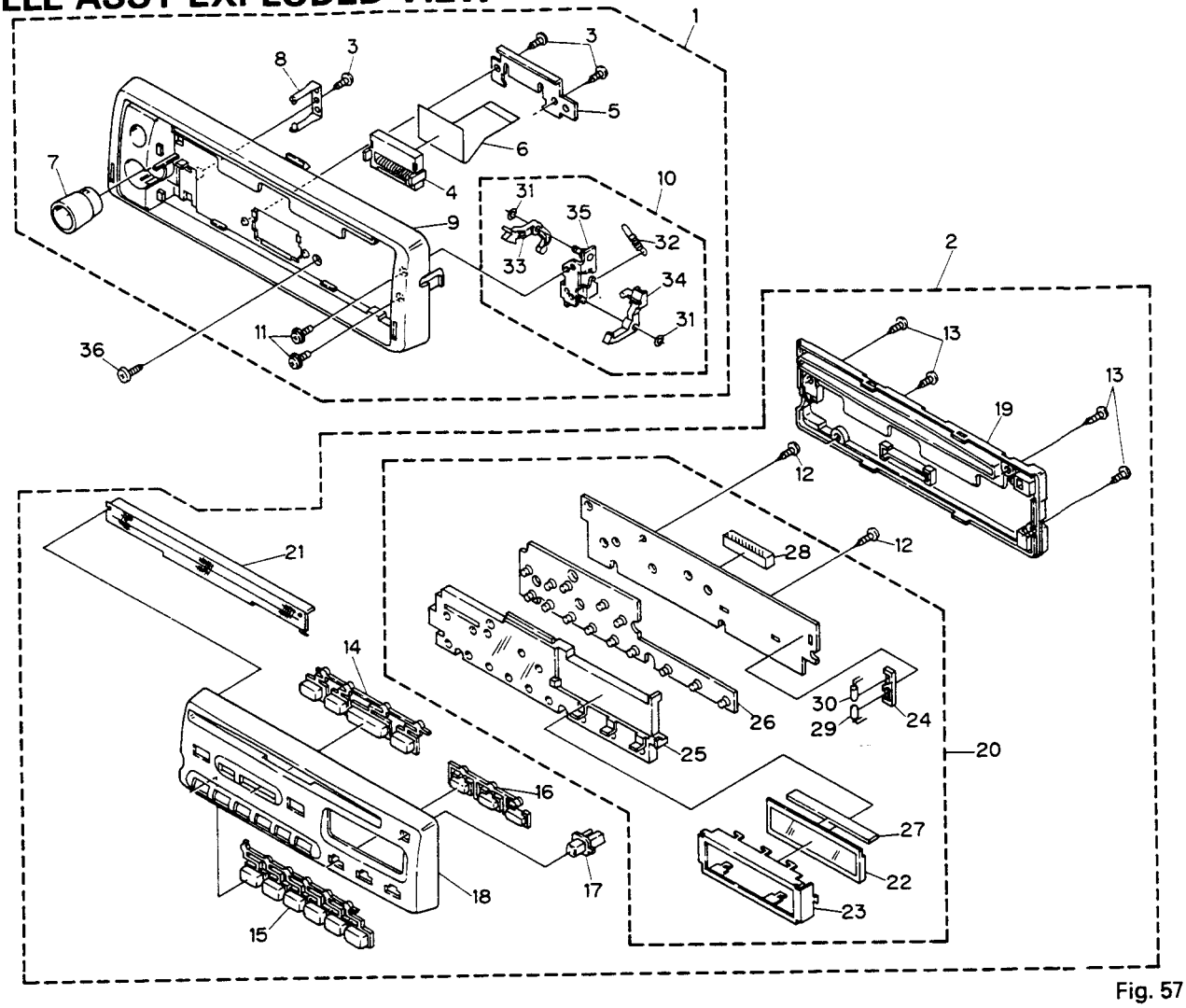


Fig. 57

● Parts List

Mark No.	Description	Part No.
	1 Panel Assy	CXA5186
	2 Detach Grille Assy(EW,X1B)	CXA5193
	Detach Grille Assy(GR)	CXA5192
	3 Screw	CBA1202
	4 Socket	CKS2293
*	5 Holder	CNC4701
	6 P.C.Board	CNP3158
	7 Lens	CNV3287
	8 Holder Unit	CXA5125
	9 Panel Unit	CXA5126
	10 Detach Mechanism Unit	CXA5188
	11 Screw	PMS20P030FZK
	12 Screw	BPZ20P080FMC
	13 Screw	BPZ20P080FZK
	14 Button	CAC3370
	15 Button	CAC3371
	16 Button	CAC3372
	17 Button	CAC3373
	18 Grille(EW,X1B)	CNS2560
	Grille(GR)	CNS2560

Mark No.	Description	Part No.
	19 Cover	CNS2565
◉	20 Key Board Unit	CWX1537
	21 Cover Unit	CXA5119
	22 LCD	CAW1194
*	23 Holder	CNC4466
	24 Holder	CNV2752
	25 Lens	CNV3285
	26 Rubber	CNV3290
	27 Connector	CNV3291
	28 Plug(CN901)	CKS2402
	29 Lamp(IL901)	CEL1013
	30 Lamp(IL905)	CEL1417
	31 Washer	CBF1039
	32 Spring	CBH1484
	33 Arm	CNV3292
	34 Arm	CNV3293
	35 Holder Unit	CXA5124
	36 Screw	PMS2OP060FZK

8. CD MECHANISM MODULE EXPLODED VIEW

NOTES:
- *Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.*
- *Parts marked by " ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

● Parts List

Mark	No.	Description	Part No.
	1	Damper	CNV2882
	2	Holder	CNV2863
	3	Screw	CBA1004
	4	Spring	CBH1417
	5	Frame	CNC3816
	6	Guide	CNV2891
	7	Frame	CNC4783
	8	Screw	BMZ20P030FMC
	9	Bracket	CNC4687
	10	Screw	BMZ20P040FNI
	11	Frame	CNC4686
	12	Screw	JFZ20P018FNI
	13	Spring	CBL1131
	14	Bracket	CNC3830
	15	Clamper	CNV2864
	16	Arm Unit	CXA5090
	17	Spring	CBH1415
	18	Washer	CBF1039
	19	Spring	CBH1418
	20	Spring	CBH1419
	21	Arm Unit	CXA5091
	22	Arm	CNV2876
	23	Washer	CBF1038
	24	Sheet	CNM3582
	25	Gear	CNV2875
	26	Spring	CBH1423
	27	Arm Unit	CXA5383
	28	Photo-transistor	PT4800
	29	Spring	CBH1449
	30	P.C.Board	CNP3330
	31	Spring	CBH1420
	32	Lever	CNC3828
	33	Roller	CLA1936
	34	Screw	JFZ20P018FNI
	35	Spring	CBL1130
	36	Arm Unit	CXA4263
	37	Sheet	CNM3111
	38	Holder	CNV3276
	39	•••••	
	40	Spring	CBH1509
	41	Roller	CNV3412
	42	Short Pin	CBL1010
	43	Washer	YE15FUC
	44	Arm	CNC3819
	45	Spring	CBH1510
	46	Gear Unit	CXA5385
	47	Connector(4P)	CKS2088
	48	Switch(S1,2)	CSN1012
	49	Screw	CBA1077
	50	LED(D1-4)	BR4361F
	51	Composite P.C.Board	CNX1956
	52	Connector(16P)	CKS2064
	53	Washer	YE20FUC
	54	Arm	CNV2884
	55	Lever Unit	CXA5093
	56	Arm	CNV2885
	57	Motor(Spindle)	CXM1058
	58	Support Wheel	CNV2859
	59	Screw	HBA-258
	60	•••••	
	61	Spring	CBH1414
	62	Spring	CBH1424
	63	•••••	
	64	Spring	CBH1410
	65	Spring	CBL1129
	66	Screw	JFZ20P025FMC
	67	Belt	CNT1047
	68	Bracket	CNC3832
	69	Holder	CNV2878
	70	Spring	CBH1413
	71	Cover	CNV2889
	72	Holder	CNV3023
	73	Chassis Unit	CXA4258
	74	Lever	CNV2874
	75	Lever	CNC3824
	76	Gear	CNV2871
	77	Arm	CNC3833
	78	Gear	CNV2872
	79	Gear	CNV2883
	80	Gear	CNV2873
	81	Gear	CNV2870
	82	Gear	CNV2869
	83	Bracket Unit	CXA4261
	84	Shaft	CLA2027
	85	Motor Unit(Carriage)	CXA4649
	86	Holder	CNV2888
	87	Screw Unit	CXA5384
	88	Screw	CBA1082
	89	Washer	CBF1054
	90	Gear	CNV2892

Mark	No.	Description	Part No.
	91	Gear	CNV2868
	92	Bracket Unit	CXA5078
	93	•••••	
	94	Screw	PMS26P040FMC
	95	Rack	CNV3268
	96	Spring	CBH1580
	97	Bracket	CNC4436
	98	Screw	JFZ17P035FNI
	99	Holder Unit	CXA5246
	100	PU Unit	CGY1020
	101	•••••	
	102	Spring	CBH1422
	103	Holder	CNC4306
	104	Screw	JGZ20P070FNI
	105	•••••	

Mark	No.	Description	Part No.
⊙	106	Motor Unit(Loading)	CXA4267
*	107	Connector(CN352)	CKS2063
	108	Connector(CN752)	CKS2149
*	109	Connector(CN351)	CKS2121
	110	Control Unit	CWX1577
	111	Weight	CNC4551
	112	Spring	CBH1458
	113	Spring	CBH1457
	114	Spacer	CNM3315
⊙	115	CD Mechanism Unit	CXA4260
	116-118	•••••	
	119	Screw	CBA1230
	120	Guide	CNV3462
	121	Screw	PMS20P025FMC

●CD Mechanism Module

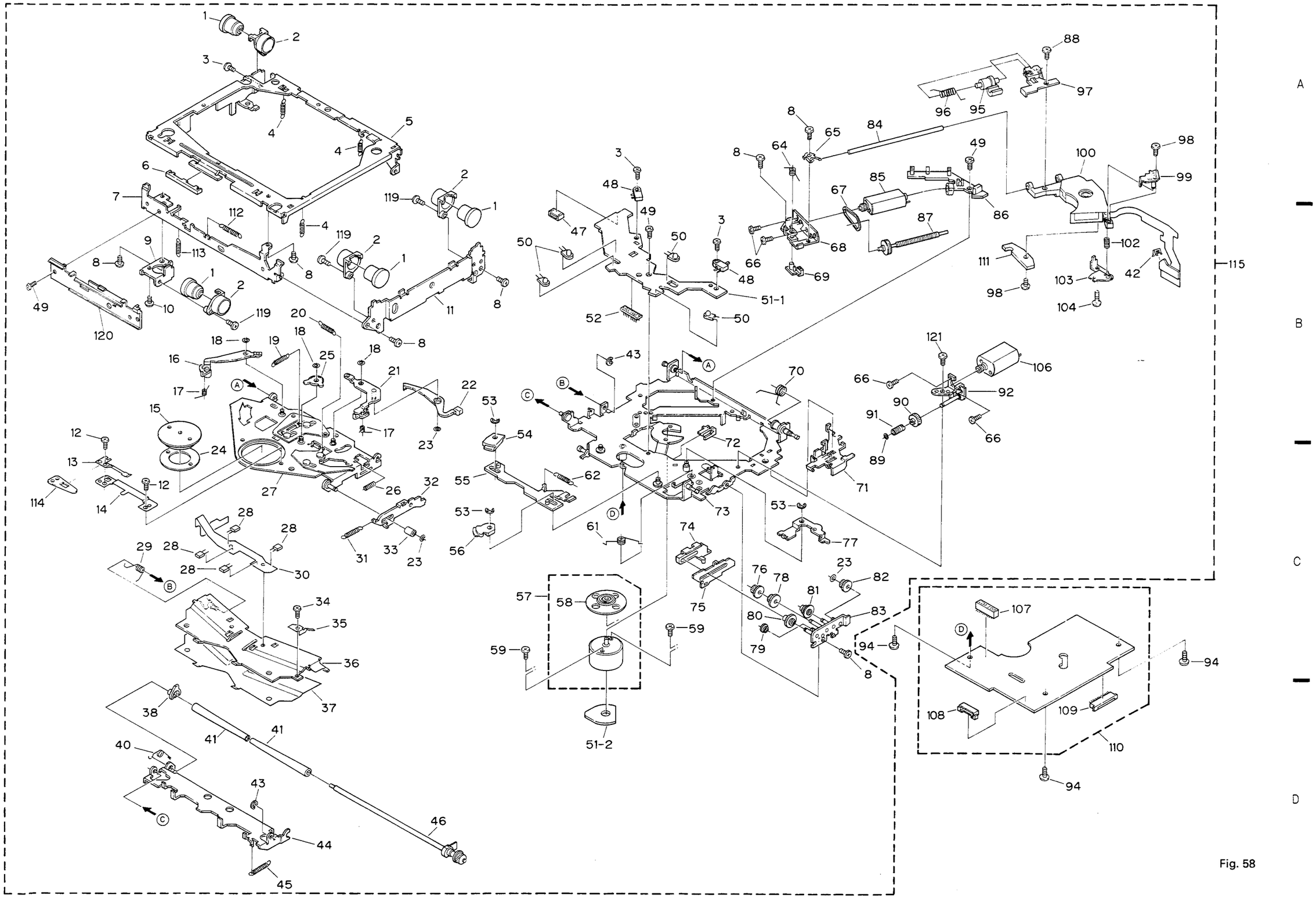


Fig. 58

9.PACKING METHOD

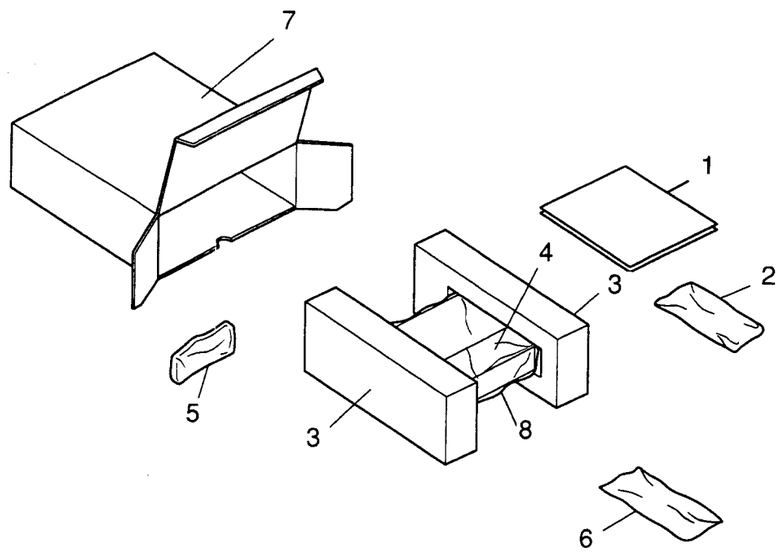


Fig. 59

● Parts List

*:Non spare part

Mark	No.	Description	DEH-670/EW Part No.	DEH670/X1B Part No.	DEH-670SDK/GR Part No.
	1-1	Owner's Manual	CRD1627	CRD1627	CRD1628
	1-2	Installation Manual	CRD1629	CRD1629	CRD1629
*	1-3	Card	CRY-062	CRY-063	CRY-062
*	1-4	Passport	•••••	•••••	CRY1013
	1-5	Polyethylene Bag	•••••	•••••	E36-618
	2	Cord	CDE3915	CDE3915	CDE3822
	3	Protector	CHP1527	CHP1527	CHP1527
	4	Holder	CNC1484	CNC1484	CNC1484
	5	Case Assy	CXA5131	CXA5131	CXA5131
	6	Accessory Assy	CEA1813	CEA1813	CEA1813
	7	Carton	CHG2279	CHG2279	CHG2278
	8	Cover	CEG1092	CEG1092	CEG1092

	6	Accessory Assy	CEA1813
	Mark	No.Description	Part No.
*	6-1	Screw Assy	CEA1808
	6-1-1	Screw(X1)	CBA-102
	6-1-2	Screw(X1)	CBA1002
	6-1-3	Nut(X2)	NF50FMC
*	6-1-4	Polyethylene Bag	CEG-127
	6-2	Handle(X2)	CNC4846
	6-3	Strap	CNF-111
	6-4	Bush	CNV1917
*	6-5	Polyethylene Bag	CEG-158

1-1 Owner's Manual		
Part No.	Model	Language
CRD1627	DEH-670/EW DEH-670/X1B	English,French,German, Italian,Dutch, Spanish,Portuguese, Swedish,Norwegian, Finnish
CRD1628	DEH-670SDK/GR	German,French

10.ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor
RS1/□S□□□J, RS1/□□S□□□J
Chip Capacitor (except for CQS.....)
CKS....., CCS....., CSZS.....

Circuit Symbol & No.	Part Name	Part No.
Unit Number :		
Unit Name : FM/AM Tuner Unit(DEH-670/EW)		
MISCELLANEOUS		
IC 51		PA4012B
IC 201		PA4017
Q 1		2SB709
Q 2		DTC124EK
Q 201		2SK435
Q 202		2SC2412K
Q 203 205		DTC124EK
D 201 204		MA157-MR
D 205		SVC203-M1
L 1 51	Inductor	CTF1241
L 2	Inductor	CTF1086
L 101	Inductor	CTF1126
L 201	Inductor	CTF1084
L 203	Ferri-Inductor	LAU220K
L 204	Ferri-Inductor	LAU470K
L 205	Ferri-Inductor	LAU4R7K
T 51	Coil	CTC1065
T 201	Coil	CTB1020
T 202	Coil	CTB1004
T 203	Coil	CTB1040
T 204	Coil	CTE1037
T 205	Coil	CTE1038
T 206	Coil	CTE1039
CG 1		DSP-201M
CF 51 52	Ceramic Filter	CTF-182
CF 201	Ceramic Filter	CTF1041
CF 202	Filter	CTF1085
X 151	Ceramic Resonator	CSS1055
X 201	Crystal Resonator	CSS1014
VR 1	Semi-fixed 10kΩ (B)	CCP1019
VR 51 101 102	Semi-fixed 33kΩ (B)	VRTB4VS333
	FM Front End	CWB1035
RESISTORS		
R 2 7		RS1/10S223J
R 3		RS1/10S124J
R 4		RS1/10S682J
R 5 13		RS1/10S0R0J
R 6 59 101		RS1/10S331J
R 10		RS1/10S560J
R 15		RS1/10S0R0J
R 54		RS1/10S472J
R 56		RS1/10S822J
R 58		RS1/10S393J
R 61 105		RS1/10S332J
R 64		RS1/10S222J
R 102		RS1/10S822J
R 104		RS1/10S563J
R 106		RS1/10S333J
R 107		RS1/10S102J
R 108		RS1/10S104J
R 111		RS1/10S123J
R 112		RS1/10S684J
R 151 152 153		RS1/10S222J
R 201		RS1/10S220J
R 202		RS1/10S681J
R 203 206 214		RS1/10S222J
R 204 213		RS1/10S473J
R 205 209		RS1/10S470J
R 207		RS1/10S822J
R 208 211 212		RS1/10S103J
R 210		RS1/10S682J
R 215		RS1/10S153J
CAPACITORS		
C 1		CKSQYB102K50
C 2 3 104		CKSQYB103K50
C 4 59		CKSQYF473Z25
C 51		CKSQYF473Z25
C 52 53		CKSQYF473Z25
C 54		CCSQSL101J50
C 55		CKSQYB102K50
C 56		CKSQYF104Z25
C 57		CSZAR33K35
C 58		CCSQCH150J50
C 60		CEALNP100M6R3
C 101		CKSQYB822K50
C 102		CKSQYB682K50
C 103		CKSQYB392K50
C 105		CEA2R2M50LL
C 106		CEA4R7M35LL
C 107 108		CKSQYB222K50
C 110		CEA[10M50LL
C 111		CEA[00M16LL
C 112		CEA[R1M50LL
C 151 152		CKSQYB273K25
C 153		CSZAR47M35L
C 154 155 156		CEA3R3M50LL
C 157		CEA[01M10LL
C 201 223 228		CKSQYB103K25
C 202 212		CKSQYB332K50
C 203 215 216 219 226		CKSQYF473Z25
C 204 208 210		CKSQYB223K25
C 205		CCSQCH220J50
C 206 207		CCSQCH820J50
C 211		CEA2R2M50LL
C 213		CCSQCH390J50
C 217		CEA[00M16LL
C 218		CEA2R2M35NPLL
C 220		CCSQCH430J50
C 221		CCSQCH100D50
C 222		CSZA10K35L
C 224		CEA[70M16LL
C 225		CKSQYB333K25
C 227		CEA4R7M35LL

===== Circuit Symbol & No.	Part Name	=========Part No.
C 229		CEA470M16LL
C 230		CEA220M16LL

Tuner Amp Unit
Consists of
Tuner Amp P.C.Board
Tone Control P.C.Board

Unit Number :
Unit Name : Tuner Amp Unit(DEH-670/EW)

MISCELLANEOUS

IC 451 851 852 853		NJM4558S
IC 501		LC7218HS
IC 551		PAL001A
IC 751		PD4473A
IC 752		M51957AL
IC 854		NJM78L05A
Q 502 503 507 509		2SC2712
Q 504 553 752 754 864 952 958 962		UN2211
Q 505		2SC3295
Q 506		UN2212
Q 508		2SC3098
Q 601 602 860 961 974		UN2111
Q 751 753 755 951 968 970		2SB1238
Q 851 852		2SD1048
Q 855 856		2SD601A
Q 857 858		2SD1781K
Q 863		2SB709
Q 953		2SD2037
Q 956 966		2SD1859
Q 957 959		2SD601A
Q 960		2SD1944
Q 965		2SD1684
Q 967 969 971		UN2211
D 501		MA151WK-MT
D 503		MA153-MC
D 505 506		MA151K-MH
D 551 851 852 853 854 855 951 962		1SS133
D 952 968		ERA15-02
D 953 954		ERA15-10VH
D 955 967		HZS9LC1
D 956		ERA15-02
D 957 964		HZS6LB1
D 958		HZS7LA1
D 959		HZS18JB3
D 960		HZS7LC2
D 961		HZS9LC3
D 963 965		1SS133
D 966		ERA82-004VH
L 501 502	Inductor	CTF1139
L 601	Coil	CTF1033
IB 752		CWW1336
IB 753		CWW1337
X 501	Crystal Resonator	CSS1030
X 601	Crystal Resonator	CSS1023
VR 451	Volume 50kΩ(B)X4	CCS1199
VR 851	Volume 50kΩ(G)X1, 20kΩ(B)X4, 200ΩX2	CCS1219

RESISTORS

R 451 452 455 456 861 862		RS1/10S332J
R 453 454 457 458 519 522		RS1/10S153J
R 503		RD1/4PS104JL
R 505 566 653 654 655 756 757 758 759 760		RS1/10S103J
R 506 515 517 518 529 530 539 603		RS1/10S472J
R 507 525 526 527 871 872		RD1/4PS222JL
R 508 540		RS1/10S474J
R 509		RS1/10S122J
R 510		RD1/4PS472JL
R 511 620 751 752 753 754 755		RD1/4PS103JL
R 513 532 891 892 895 896 897 898		RS1/10S222J
R 514		RD1/4PM182J
R 516 531 605 618 770		RS1/10S473J
R 521		RS1/10S563J
R 528		RD1/4PM222J
R 533 606 869 870 957 975 990		RS1/10S221J
R 534		RS1/10S182J
R 535		RS1/10S821J
R 536 537		RS1/10S101J
R 538		RD1/4PS470JL
R 541 855 856		RS1/10S273J
R 542 544 881		RS1/8S0R0J
R 543 567 656 657 775 846 847		RS1/10S0R0J
R 545		RD1/4PS102JL
R 557		RS1/10S223J
R 561 562 613 614 615 616		RD1/4PS682JL
R 563 564		RS1/10S682J
R 565		RS1/10S752J
R 601		RS1/10S0R0J
R 602		RD1/4PM392J
R 604 985		RD1/4PS221JL
R 607 608 609		RD1/4PM221J
R 611		RS1/10S682J
R 612		RD1/4PS473JL
R 617 886 887		RS1/10S683J
R 619		RD1/4PM104J
R 761 762 763 768 769 840 841 954 965 968		RS1/10S103J
R 764 766 842 961 963 976 978		RS1/10S472J
R 765		RD1/4PM272J
R 767 857 858		RS1/10S272J
R 771		RS1/10S100J
R 772 773 774		RS1/10S103J
R 851 852 859 860		RS1/10S392J
R 853 854		RS1/10S104J
R 863 864		RS1/10S393J
R 865 866		RS1/10S102J
R 867 868 952 964		RS1/10S102J
R 873 874		RS1/10S222J
R 875 876		RS1/10S123J
R 877 878		RD1/4PM471J
R 879 880 951 953		RS1/10S223J
R 899 900		RS1/10S393J
R 956		RS1/10S562J
R 958 959		RS1/10S331J
R 960		RD1/4PS220JL
R 967		RS1/10S562J
R 969 974		RD1/2PS471JL
R 973		RS1/10S681J
R 977		RD1/4PS102JL
R 979		RD1/4PS222JL
R 981		RS1/10S102J
R 986 987		RS1/10S103J
R 991		RS1/10S222J

CAPACITORS

C 451 452	CKSQYB332K50
C 453 454 509 876 877	CCSQCH330J50
C 455 456	CKSQYB333K50
C 501	CKSQYB223K50
C 502 508 511 531 872	CKSQYB103K50

Circuit Symbol & No.	Part Name	Part No.
C 503 504 505 506 507 605 606		CKSQYB104K16
C 510		CEALNP4R7M16
C 512		CEAR47M50LL
C 513 515 518 529 602 751 954 970		CKSQYB473K16
C 514		CKSQYB103K25
C 516 601		CCSQCH102J50
C 517		CCSQCH561J50
C 519		CCSQSL101J50
C 520 865 866		CCSQCH101J50
C 521		CKSQYB102K50
C 522 523		CCSQCH270J50
C 555		CEA2R2M50LL
C 556 951		CEAS010M50
C 557		CEAS470M16
C 558		CEAS100M16
C 559 560		CEA010M50LL
C 561 562 752 851 852 853 854 855 856		CEA100M16LL
C 563 564		CCSQCH471J50
C 604		CCSQCH120J50
C 609		CCSQCH150J50
C 610		CEA101M6R3LL
C 857 858		CEA220M10LL
C 859 860		CCSQCH270J50
C 861 862		CEALNPR33M50
C 863 864		CEAS220M10
C 867 868		CEA100M16LL
C 869 870 873		CCSQCH221J50
C 952	3300 μF/16V	CCH1150
C 953		CKSQYB104K25
C 955 967		CEAS101M16
C 956	1000 μF/16V	CCH1149
C 957 958		CEAS101M10
C 960		CEA220M16LL
C 961		CEA101M10LL
C 962 963		CEA470M16LL
C 964		CEA101M6R3LL
C 965		CKSQYB472K50
C 966		CEA101M16LL
C 968		CEAS221M10
C 969	1000 μF/16V	CCH1149

Unit Number :
Unit Name : Key Board Unit

MISCELLANEOUS

IC 901		LC7582E
D 901 902 903		MA153-MC
IL 901	Lamp 14V 40mA	CEL1013
IL 902 903	Lamp 14V 40mA	CEL1295
IL 905	Lamp 14V 40mA	CEL-147
IL 906 907 908	Lamp 14V 40mA	CEL1297
	LCD	CAW1194

RESISTORS

R 901 902 903	RS1/8S103J
R 904	RS1/10S333J
R 905 906	RS1/10S104J
R 907 912	RS1/8S183J
R 908 913	RS1/8S473J
R 909 914	RS1/8S153J
R 910 915	RS1/8S273J
R 911 916	RS1/8S683J
R 917	RS1/10S103J

CAPACITORS

C 901	CCSQCH301J50
C 902	CKSQYF104Z25
C 903	CKSYF224Z25

Circuit Symbol & No.	Part Name	Part No.
Unit Number :		
Unit Name : Control Unit		

MISCELLANEOUS

IC 351		UPC1347GS
IC 601		UPD6374AGH
IC 602		XRA4558F
IC 651		PA3026
IC 653		XRA4558F
IC 701		UPD6375GC
IC 702		TC9237F-PK
IC 703		TA2009F
IC 751		PD5229A
IC 752		MB3854PF
Q 351		2SB1260
Q 601		2SB709A
Q 651		2SB1184F5
Q 652		2SB1184F5
Q 654		DTC114EK
Q 701 702		2SD1781K
Q 704		2SB709A
Q 752		DTA114EK
Q 753		DTA114EK
Q 754		DTC114EK
Q 755		2SD1760F5
Q 756		2SD1030
D 651		SC016-2
D 652		SC016-2
D 701		MA151WA-MN
D 757		HZM6R8NB2
D 758	Chip Diode	MA151A-MA
L 701	Inductor	LCTBR39K2125
TH 752	Thermistor	CCX1015
X 701	Crystal Resonator	CSS1067
X 751		CSS1084
VR 351		CCP1183
VR 352 355 356		CCP1185
VR 353 354		CCP1177
	Checker Chip	CKF1025

RESISTORS

R 351	RS1/8S100J
R 353	RS1/16S623J
R 354 757 779	RS1/16S473J
R 355	RS1/16S122J
R 356	RS1/16S683J
R 357	RS1/16S683J
R 358	RS1/16S332J
R 359	RS1/16S332J
R 360	RS1/16S684J
R 361	RS1/16S153J
R 362	RS1/8S120J
R 364	RS1/16S102J
R 369	RS1/16S103J
R 375 377 713	RS1/16S102J
R 379	RS1/16S513J
R 380	RS1/16S104J
R 381	RS1/16S133J
R 382	RS1/16S133J
R 601 602 603 604 605 607 610	RS1/16S103J
R 606	RS1/16S224J
R 609	RS1/16S102J
R 611 612 665	RS1/16S102J
R 613	RS1/16S102J
R 614	RS1/16S472J
R 615	RS1/16S472J

Circuit Symbol & No.	Part Name	Part No.
R 616		RS1/16S102J
R 617		RS1/8S0R0J
R 618 619 620		RS1/8S102J
R 652		RS1/16S162J
R 654		RS1/16S162J
R 655		RS1/16S183J
R 656		RS1/16S362J
R 657		RS1/16S162J
R 663		RS1/10S181J
R 664 753 755		RS1/16S103J
R 669 797		RS1/16S103J
R 670		RS1/10S151J
R 676		RS1/16S683J
R 679		RS1/16S102J
R 684		RS1/16S102J
R 701 702 711 712 764		RS1/16S102J
R 704 705		RS1/16S162J
R 707 708		RS1/16S223J
R 709 710 729 731		RS1/16S0R0J
R 717		RS1/16S301J
R 721		RS1/16S472J
R 722		RS1/16S162J
R 724		RS1/10S1R0J
R 725		RS1/16S472J
R 730 733		RS1/16S0R0J
R 738 798		RS1/16S0R0J
R 751		RS1/10S1R0J
R 752		RS1/16S183J
R 754 776		RS1/16S472J
R 756 771 772 773		RS1/16S222J
R 758		RS1/16S224J
R 765 793		RS1/16S102J
R 766		RS1/16S473J
R 767 768		RS1/16S224J
R 769 770		RS1/16S104J
R 774		RS1/16S103J
R 775		RS1/16S104J
R 778		RS1/16S103J
R 780		RS1/16S104J
R 781 782		RS1/16S362J
R 783 784 785 786 787		RS1/16S681J
R 788		RS1/16S102J
R 791 792		RS1/8S391J
R 794		RS1/16S151J
R 795		RS1/16S0R0J
R 799		RS1/10S1R5J

CAPACITORS

C 351		CEV470M16
C 352		CKSQYB104K25
C 353		CEV101M6R3
C 354 355		CSZSR4R7M10
C 357 359 366		CKSRYB102K50
C 358		CKSRYB331K50
C 360		CKSRYB271K50
C 361		CCSRCH220J50
C 601		CKSRYB222K50
C 603		CKSRYB331K50
C 604 606 703 704		CKSYB224K25
C 605		CKSYB103K25
C 607 654 759		CKSYB224K25
C 608		CSZS010M16
C 609 610 761		CEV100M16
C 611 701 707 710		CKSRYB103K25
C 652		CKSYB224K25
C 653	220 μF/10V	CCH1148
C 655		CKSRYB391K50
C 658	220 μF/10V	CCH1148

Circuit Symbol & No.	Part Name	Part No.
C 662		CEV101M10
C 666		CKSQYB102K50
C 670		CKSQYB273K50
C 671		CKSRYB103K25
C 672		CKSQYB333K25
C 702		CEV101M6R3
C 705 706		CCSRCH090D50
C 712		CEV220M6R3
C 716		CEV100M16
C 722 723		CEV4R7M35
C 724		CCSRCH151J50
C 726		CCSRCH100D50
C 727 728		CKSRYB103K25
C 751 752		CCSRCH221J50
C 753 754 755		CCSRCH221J50
C 756		CKSRYB472K50

Unit Number :
Unit Name : Switch P.C.Board

D 1 2 3 4		BR4361F
M 1	Motor(Spindle)	CXM1058
M 2	Motor Unit(Carriage)	CXA4649
M 3	Motor Unit(Loading)	CXA4267
S 1 2	Switch(Home,Clamp)	CSN1012

Unit Number :
Unit Name : Detector P.C.Board

P 1 2 3 4	Photo Transistor	PT4800

Miscellaneous Parts List

PU Unit	CGY1020

● The DEH-670SDK/GR Parts List enumerates the parts which differ from those for the DEH-670/EW,X1B only.
The parts other than those enumerated in the DEH-670SDK/GR Parts List are identical with those in the DEH-670/EW,X1B Parts List,to which you are requested to refer,accordingly.
The DEH-670/EW,X1B Parts List is given on page 69.

● Tuner Amp Unit

	DEH-670/EW,X1B	DEH-670SDK/GR
Circuit Symbol & No.	Part No.	Part No.
IC502	·····	KHA172A
Q501	·····	2SC2712
Q554,859	·····	UN2211
Q853,854	·····	2SD601A
Q861,862	·····	2SD601A
D552,856	·····	1SS133
X502	·····	CSS1061
R501	·····	RS1/10S684J
R502	·····	RD1/4PS102JL
R523	·····	RS1/10S222J
R524	·····	RS1/10S473J
R567	RS1/10S0R0J	RS1/10S752J
R653	RS1/10S103J	·····
R658	·····	RS1/10S0R0J
R843	·····	RS1/10S472J
R846,847	RS1/10S0R0J	RS1/10S105J
R848,849	·····	RS1/10S102J
R884	·····	RD1/4PS102JL
R885	·····	RS1/10S102J
R893,894	·····	RS1/10S222J
C524	·····	CEA4R7M35LL
C525	·····	CEA470M16LL
C526	·····	CKSQYB683K25
C527	·····	CKSQYB103K50
C528	·····	CEA220M16LL
C530	·····	CEAR33M50LL
C565	·····	CEA100M16LL
C874	·····	CKSQYB102K50
C875	·····	CKSQYB682K50

● FM/AM Tuner Unit

	DEH-670/EW,X1B	DEH-670SDK/GR
Circuit Symbol & No.	Part No.	Part No.
Q51	·····	DTA114TK
T51	CTC1065	CTE1021
T52	·····	CTE1022
R56	RS1/10S822J	RS1/10S393J
R57	·····	RS1/10S562J
R60	·····	RS1/10S473J
C58	CCSQCH150J50	CCSQCH060D50
C157	CEA101M10LL	CEA101M10LS
C227	CEA4R7M35LL	CEA4R7M35LS
C229	CEA470M16LL	CEA470M16LS